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# THE JOURNAL

OF THE

*Michigan State Medical Society*

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

## THE FREE CLINIC PROBLEM

There is perhaps no one condition which has contributed more to the elimination of the family doctor than the so-called free clinic or hospital clinic. The class of patients who frequent these places are those once treated by the general practitioner, who, when sickness overtook them, were carried by their doctor until such time as they could save enough, after deducting living expenses, to balance the account. These people were usually a good class of citizen. They were thrifty and took pride in keeping themselves square with the world. But gradually as the clinic increased in popularity and as Jones and Brown received free service, and while the head of the family perhaps was temporarily out of employment, they too availed themselves of the services of the free clinic.

Nor do we exactly criticize this individual for availing himself of this service. Yet it is fundamentally and governmentally wrong and decidedly un-American for any group of individuals, or organization, to place before our people enticements which tend to pauperize and encourage dependence instead of independence as promulgated in the Declaration of our forefathers. It follows, therefore, that free clinics and social agencies are undermining the spirit of true Americanism and are breeding socialistic tendencies.

—J. D. BROOK, M.D., *Past-President of the Michigan State Medical Society.*

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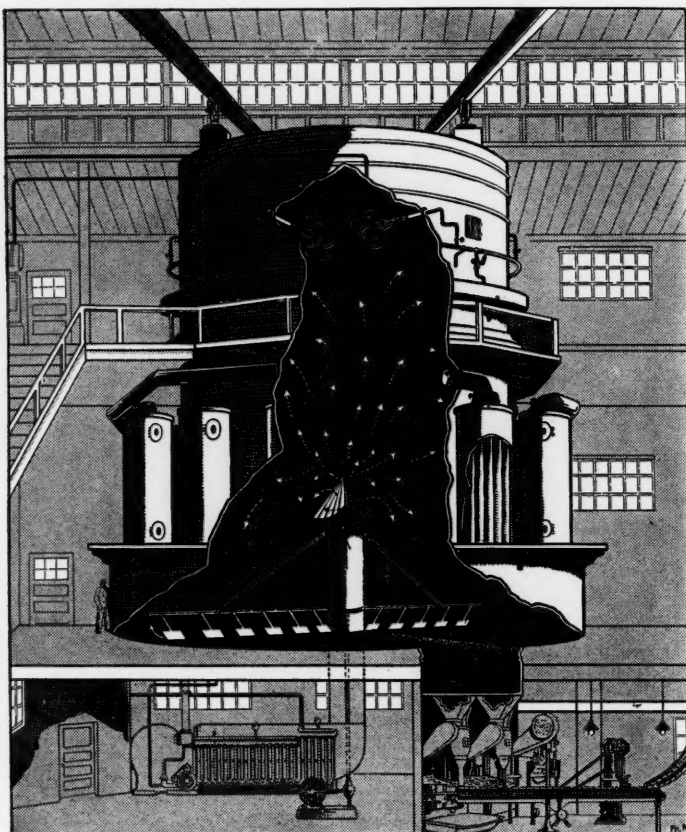
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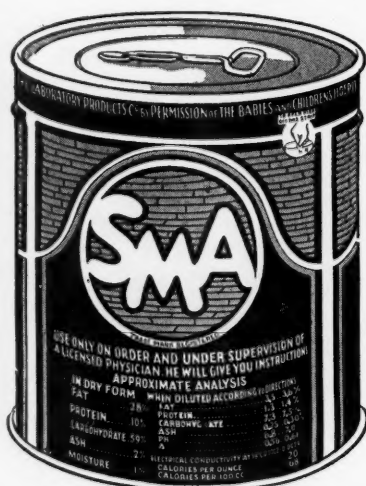
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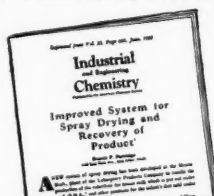
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# THE JOURNAL

## OF THE

### *Michigan State Medical Society*

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

VOL. XXIX

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#### THE PASSING OF THE FAMILY DOCTOR AND PRACTICE OF THE FUTURE—PRESIDENT'S ADDRESS

J. D. BROOK, M.D.†  
GRANDVILLE, MICHIGAN

It would be unkind and ungrateful indeed if I did not at this time extend to you my thanks and appreciation for the honor you have conferred in selecting me to officiate as your president during the past year. The duties connected with the office, while somewhat exacting, were made pleasant by the thought that I was rendering a bit of service to the profession. I also acknowledge gratefully the assistance rendered by the State Secretary, the Editor of the Journal, members of the Executive Committee of the Council, and particularly the sound counsel of our departed friend, Dr. Guy L. Kiefer.

To my distinguished successor I bequeath all the honor, pleasures, hardships, and sleepless nights incident to the office, as well as pleasant thoughts of anticipated accomplishments socially, politically, and professionally, probably mingled with some disappointments which will possibly follow an earnest desire to do his bit to emancipate humanity from disease.

†For professional note see Volume 28, page 714, *Journal Michigan State Medical Society*.

Being well aware that making statements concerning the future, whether it be concerning the weather, the stock market, or medicine, is a somewhat hazardous business, I have the temerity, nevertheless, to present my views, based on an experience of twenty-eight years of practice. To make proper deductions it is necessary that we review the past, and analyze the present, so that we may the more intelligently estimate the fu-



ture conditions of medical practice. Three or four decades ago specialists were the exception, and were confined to the larger cities, where they were usually connected with some medical school. Many continued to practice general medicine along with their specialty. The family doctor was the sole guardian of the patient's welfare and treated everything from alopecia to bunions.

If consultation was needed, another practitioner was called mainly to corroborate or to refute the diagnosis. If an operation were decided upon, the time was set and the two usually did the job at the patient's home. When it was a matter of medical treatment the consultant would usually suggest to the attending physician a little change in treatment and state this fact to the relatives of the patient to impress them with his superior knowledge and incidentally to inform them that he had earned his fee.

There were no exclusive obstetricians, no internists, no roentgenologists, no diagnostic laboratories, no fracture specialists, no proctologists, no industrial surgeons, and very few exclusive surgeons, dermatologists, otolaryngologists, or pediatricians, very little preventive medicine aside from vaccination for smallpox, and no clinics except those connected with a medical school, which were used for teaching purposes only. There were no pure food or drug laws and no narcotic law, no birth certificates to file and a physician could and did prescribe some form of alcohol, the quantity and frequency of the dosage of which should today be left to his judgment.

Enteric diseases were rampant. The usual crop of sick babies kept the doctor on the jump during the summer months while fall and early winter supplied him with his annual number of typhoids, the revenue of which in many instances supplied the funds to send son or daughter to college. Diphtheria, scarlet fever and pneumonia and other communicable diseases added materially to his income. The scourge of tuberculosis was everywhere and early diagnoses were not made. There were no building or plumbing codes, no supervision or regulation of water supplies, no food or milk inspection and the tin can and its opener were not yet thought of. The result was that through unsanitary housing and the ingestion of polluted water and spoiled food many people suffered from acute illnesses which now have completely disappeared.

Tonsillectomies were the exception, and if done at all were performed with the tonsilotome, which cut off the top and left the base. Many fractures were undiagnosed since the evidence of an existing fracture was crepitus or angulation or both, and the unfortunate patient was cared for in the home. The functional result depended largely upon whether or not it had been properly set.

The foregoing is recited simply to remind us of the duties, responsibilities and technical knowledge required of the family doctor of years ago compared with that of today.

As time went along changes took place. As our knowledge of the causation of disease through scientific investigation became better known, preventive measures, new modes of treatment, and additional appliances were brought into general use. Soon their number increased to such proportions that the general practitioner could no longer keep himself properly informed, which resulted in the creation of a class of physicians who limited their practices to the treatment of certain types of disease only. These were called specialists under various titles for differential reasons only. This of course took some of the business from the family doctor. Still he kept on.

Hospitals were not being so popular as at present, especially for the "fat and forty" individual who delights to tell of her gall bladder operation, nevertheless they were taking their place rapidly as a community necessity. Rich and poor alike were cared for, but the latter, being unable to pay, caused a large deficit upon the hospital ledger. Members of hospital boards conceived the idea, with the backing of the newspapers and business people, that there should be set aside a day known as hospital day at which time the public should be solicited for funds with which to offset the accrued deficit.

It was found that the mortality in babies under one year was extremely high, due particularly to improper feeding. This fact resulted in the formation of baby clinics where at first only the indigent poor, where the mortality was highest, were invited to bring their babies for instruction on proper feeding and care. Results being highly satisfactory and generally made known, the clinics grew until almost anybody with a baby could obtain this free service. Hence another slice from the family doctor's income, but still he kept on.



The ravages of typhoid fever were terrible. City officials, physicians, and laymen alike demanded a cessation of the scourge. We knew it was caused by contaminated food or drink, but the source was not always easy to locate. Science taught us, however, that a pure water supply would eliminate the disease and the city now without such supply is shunned and avoided. Typhoid being eliminated the family doctor was relieved of another source of income, but he remained at his work.

Early diagnosis of tuberculosis was now the general rule and recoveries followed under proper surroundings and supervision. This not being obtainable in the average home, municipal sanatoria were provided by the city or county. Now most tuberculous people are cared for in this manner and the family doctor is again relieved of this source of revenue.

Before the enactment of workmen's compensation laws, injuries to employees resulted in a great deal of controversy and litigation. Depending upon the settlement, the doctor did or did not receive any compensation, more often the latter. In general, the workmen's compensation law is to be commended, since it provides for remuneration of all concerned.

This law, however, brought into existence another group of specialists known as industrial surgeons. Insurance companies, believing that physicians confining their practice to surgery were probably best qualified to care for the injured, were eager to contract with them to care for all their business, a large share of which could be done just as skillfully by the family doctor. Then followed the first aid room in the factory, presided over by a trained nurse. Many minor injuries are now cared for by this nurse, and I understand medicines and hypodermics are administered for various ailments in violation of the State Medical Practice Act. These activities are supposed to be under the supervision and direction of the factory physician but for a large part he knows nothing about them.

Were the work of the industrial surgeon limited to the above activities there would be no quarrel, but either through advice or recommendation from the nurse or solicitation of the physician, other body ailments which should properly be referred to the family physician which have no relation to indus-

trial surgery are treated by the factory doctor.

Diphtheria, the most widespread plague of child life, occupied a goodly portion of the time, energy, and worry of the physician. The introduction of antitoxin brought a powerful weapon for its alleviation, but it remained for toxin-antitoxin practically to eliminate it. The question of just how this shall be done still confronts us. Our late mutual friend, State Commissioner of Health Dr. Guy L. Kiefer, many times said it was the doctor's job. I have a great deal of respect for Dr. Kiefer's opinion and believe he was correct when he made that statement, but from my experience in public health work I am a little apprehensive that it would not be practically successful because in the aggregate we are a body of specialists and no one particular group will or does assume the responsibility. For the family physician this is impossible since he comes in contact with few children and attends a diminishing number of obstetrical cases, although he would undoubtedly appreciate receiving this bit of employment. The obstetrician says it's out of his line, the pediatricist says he has no way of knowing when children have arrived at the proper age in the absence of any birth record. The surgeon should not be asked to perform such a minor surgical procedure, and, of course, other types of specialists are out of the running. Therefore, although I am not completely satisfied with it, until some better system is devised, I believe that school immunization as at present practiced will bring the most satisfactory results.

There is perhaps no one condition which has contributed more to the elimination of the family doctor than the so-called free or hospital clinic. The class of patients who frequent these places are those once treated by the general practitioner, who when sickness overtook them were carried by their doctor until such time as they could save enough, after deducting living expenses, to balance the account. These people were usually a good class of citizen. They were thrifty and took pride in keeping themselves square with the world. But gradually as the clinic increased in popularity and as Jones and Brown received free service, and while the head of the family perhaps was temporarily out of employment, they too availed themselves of the services of the free clinic.

Nor do we exactly criticize this individual for availing himself of this service. *Yet it is fundamentally and governmentally wrong and decidedly un-American for any group of individuals, or organization, to place before our people enticements which tend to pauperize and encourage dependence instead of independence as promulgated in the Declaration of our forefathers.* It follows therefore that free clinics and social agencies are undermining the spirit of true Americanism and are breeding socialistic tendencies.

*It is my conviction that the care of the indigent and semi-indigent sick is a function of government and as such should be conducted by the already existing agencies amplified somewhat perhaps to meet the requirements of the various localities.*

As has been said many times, medical science has advanced more rapidly during the past three decades through specialization, new diagnostic methods and appliances, laboratory procedures, etc., than during the previous centuries, entailing much necessary additional expense, with the result that the man of average means, with living costs higher than ever, feels he is unable to carry the burden. And although I am sure that we as a profession realize that good health is as sweet and dear to the poor as the rich and acknowledge that all people are entitled to the best which medical science affords, we feel, nevertheless, that since all other individuals connected with the so-called hospital clinics are compensated from community funds, the physician should not be asked to carry this unjust burden gratuitously.

Nor is the doctor always guiltless in aiding the cause. Occasionally a patient is deliberately referred to the clinic when he should be on his own; again a physician is forced, either through social position or hospital connection, to render free service. Occasionally he plays deliberately with a commission or bureau violating professional ethics and disregarding all standards of professional conduct.

I have never yet received a satisfactory answer to the query—Why the free hospital clinic? A partial answer may be gleaned from the following incident which is self-explanatory. A physician on service at a clinic told one of the admitting officers that Mrs. Jones should go to her private physician and that Mr. Brown was properly a city charge. The attendant replied by say-

ing, "Why doctor, if we did that with those who come here I would lose my job." This reply is obvious and needs no further comment. But this is not a symposium on clinics. They are here doing a wonderful work even though suffering from abuses, and undoubtedly will remain until some other system supplants them.

I know of but one condition for which the family doctor has no competition, and that is making the emergency night call. For the emergency at two A. M. he is still the first friend of the family. While laboring to relieve the patient during the course of the conversation he is apologetically informed that father was injured at the factory recently and of course the factory doctor took care of him, that Sammy recently had his tonsils out by a tonsillectomist, and that when daughter contracted pneumonia of course they wanted the best and therefore employed an internist, and mother's last baby was delivered by her obstetrician and that she now took her baby to the clinic; all of which wasn't music to his ears, particularly when he was asked to place the charge for this visit upon his ledger.

How then shall the public in the future receive medical care? A national committee on the cost of medical care has been for more than two years at work attempting to determine the causes but they are still far from their goal. The report of this committee undoubtedly will largely determine the conduct of medical practice of the future. If the utterances of members of this committee, and particularly its chairman, Dr. Ray Lyman Wilbur, are of any significance, and I believe they are, I can see only one outcome, namely, some form of state medicine.

From a news item I quote Dr. Wilbur less than a year ago as saying, "A new social significance for medicine—to give everyone, regardless of residence or economic condition, the best the profession affords, and to make medicine fit in with the other social forces so that its distribution will be uniform, is vital in this age of science and democracy." No system of state medicine could be better defined, and when men of our own profession holding high official position in our government come out boldly with these statements, I, like Belshazzar of old, can see the handwriting on the wall.

At about the time of Dr. Wilbur's utterance came the following from Dr. Glen Frank, President of the University of Wisconsin: "Our only hope of a healthier nation, unless we go bag and baggage to state medicine, lies with the unselfish doctor who will consciously reduce his income by giving patients advice that may keep them from falling sick again." The inference is that state medicine will practically eliminate disease. If this were true the countries of Europe where the system is now in operation should be the healthiest in the world.

The physician is the greatest philanthropist in the world, having preached the gospel of good health and disease prevention for years, thus diminishing his own business and financial reward. What other individual, business, or organization does likewise? Our own state society is annually through its self sacrificing members gratuitously preaching the gospel of good health to thousands. What other profession or organization has given a benefactor such as Jenner, Pasteur, Walter Reed or a Gorgas to the cause of preventive medicine? Scores of others have devoted their entire time or even sacrificed their lives that others might live.

No one can deny that basically the dissemination of information for disease prevention is an educational institution. Therefore, since the laborer is worthy of his hire, the physician may lay claim to compensation as instructor; or conversely, the educator should, as a true American, do his bit for humanity, by also unselfishly diminishing his salary. I have not heard, however, of any propaganda on the part of teachers or educators toward such an object.

*I have advocated for years and still believe that the truths of scientific preventive medicine as available today, properly taught in our public schools, will eliminate more disease than all systems of state medicine in existence or that ever will be concocted.*

I have touched only here and there upon a great subject which the masters of thought have been unable to solve as yet, but changes will come through the great processes of evolution in the scientific, industrial and political world and the doctor, the nurse and the hospital must and will adjust themselves to meet the everchanging needs which disease inflicts upon humanity.

We see, then, the factors which have tended to eliminate the family doctor. The

present system with its hodgepodge of clinics, bureaus, commissions and what not, sponsored by all sorts of legal, official, and non-official organizations and societies, is unsatisfactory to both the public and the doctor, resulting in a great economic waste and duplication of effort. What, then, shall take its place?

Dr. M. L. Harris, immediate past president of the American Medical Association, has advocated strongly that county medical societies incorporate and organize for business purposes to establish medical centers owned, controlled and managed by the profession, where all classes of persons who are unable to pay regular fees to their own physicians for medical care, can be given the highest type of medical treatment at prices within their means. This system devised to supplant the free clinic has a serious drawback, namely, the matter of financing. The average physician is unable to invest a sufficient amount for its establishment, and much less able to subsidize it, since its revenues would be inadequate for its maintenance.

Although it is unnecessary for me to state that I never have been, and am not now, an advocate of state medicine, nevertheless I believe that a system somewhat like the following will within the next few years supplant the present methods of practice. The present tendency in caring for the sick, as in industry, business, and finance, is centralization. To care for the indigent and semi-indigent sick most efficiently and economically, a centrally located county hospital with convenient township units would be established somewhat after the plan suggested some years ago by the late Dr. Victor C. Vaughan, but which he never made public.

These hospitals would be completely equipped and maintained at county expense and manned by a crew of medical and surgical specialists on eight hour shifts. The township units would care for maternity cases, acute ailments and emergency surgery in their particular district, while the more serious and complicated cases would be transported and cared for in the central county unit. The system would operate by the patient calling the hospital, which would send out an ambulance or motor car for his transportation, or perhaps if the distance was great, in case two or three counties combined the service, and the need for speed was urgent, the airplane ambulance would



be pressed into service. Indeed, I would not be surprised to see hospitals of the future provide nearby landing fields, or perhaps one on its roof.

The charge for care in these hospitals would be determined by a board of trained commissioners whose appointment and tenure of office would be as far as possible removed from politics, and the deficit would be shouldered by the county.

An outpatient department would operate daily and emergencies of accident or illness would be given twenty-four hour service. This type of service is now in operation for communicable diseases and I see no reason why it should not work out equally well for other ailments.

Of course the pay patient would continue to be treated by his own physician at a private hospital or his home as at present.

The advantages of such a system would be:

1. To make available to everyone the best in scientific medicine.
2. Eliminate the evils of free clinics.
3. Distribute the cost to all in proportion to their worldly possessions.
4. Provide compensation for the doctor who now works gratis.
5. Eliminate duplication of service, with resultant lower costs.
6. Eliminate largely the annual drives for welfare funds.

The above system might be termed a fantastic dream, but let me remind you that much of it is already in operation today. Great ribbons of concrete provide smooth transportation in heated ambulances for patients residing thirty to fifty miles distant, and the airplane ambulance is already in existence. The question of whether a patient is free or part pay is today determined by social workers, and the deficit in the cost of operation is met by funds from the community chest.

It seems that because of the demand and the complicated affairs of today some such system will be evolved to care for the indigent and semi-indigent sick of tomorrow.

But be not alarmed; state medicine is not coming—it is here, operated and controlled by private corporations and organizations instead of governmental units.

And thus have I endeavored to indicate to you the conditions which have eliminated the family doctor, the man who as first friend of the family was consulted not only for sickness or accident, but whose counsel and advice concerning family affairs, financial troubles, legal difficulties and moral obligations, was generally accepted by his patrons.

The family doctor, an institution beloved by generations of the past, but now extinct.

May his memory never perish.

## MODERN MEDICINE

WALTER H. SAWYER, M.D.†  
HILLSDALE, MICHIGAN

A great many changes have taken place in the relation of physicians to one another and to the public during an experience of forty-six years in the practice of medicine. These changes have been brought about largely through the increasing complexity of our social organization and our different modes of living. In the realm of knowledge empiricism has yielded to exact information and mysticism has lost its former hold upon the race. The evolution has been so rapid as to make the problem of adaptation a very vexing one, and while it will be solved ultimately, we are at present in a state of confusion and unrest.

For our own immediate consideration there are some rather important questions which I should like to raise. First, is the general practitioner to survive and, if so, under what circumstances? Secondly, will specialism practically meet the needs of society? Thirdly, under what condition is state medicine justified, and what will be the result?

†Dr. Sawyer is Regent of the University of Michigan.

I cannot escape the judgment that the physician with a broad, general knowledge of medicine must survive, although the day when the individual practitioner was sufficient unto himself is past. The high type of general practitioner fills a need, especially in the smaller communities, which cannot be met by the man who devotes all of his study to one branch of medicine. But in the past few years modern educational incentives

and encouragement have tended towards specialism and the passing of the family doctor. It is therefore with the idea of promoting the interest of the general practitioner that organized medicine is functioning, and the schools are offering courses which give to him the opportunity to keep in touch with the recent advances in medical science without serious sacrifice of time, relationship, or expense.

Considering the expenditure in energy and money in the effort to raise the standards and improve the facilities of the undergraduate school of medicine during the past twenty years, is it necessary to provide for post-graduate training for physicians in order that they may meet the legitimate demands of the community for medical service? To you who have gathered here tonight, it would be superfluous to point out the vast extension of the boundaries of our science in recent years. Be the undergraduate course what it may, it is wholly inadequate to make more than a beginning in either the art or the science of medicine. Your presence here tonight is ample testimony that further opportunity for medical teaching is necessary to the successful solution of our professional responsibilities. Assuming that further medical instruction is not only important but imperative, the question arises as to how it could be provided, and upon whom rests the cost.

An analysis of the cost per year per student in sixty-seven medical schools shows a deficit of about \$452 over what is received in fees. Averaging the minimum time spent in preparation for the college degree, there is a three year period between high school graduation and medical school entrance. Assuming that the majority of students come from tax supported or endowed institutions, and that the financial deficit is about the same as in the medical schools, we see that the graduate in medicine costs the taxpayer \$3,154 upon graduation.

While post-graduate work has been going on for many years more or less effectively, if somewhat inconveniently for most of us, it has never been as well organized as the undergraduate program, and one of the first questions which very properly comes up in providing for it is the very important item of its cost. Who may properly be responsible for the cost? Should it be paid by the doctor or is its expense a proper item to

be spread upon the tax roll? Both views are held. Personally, I am inclined to think that the cost should be shared by both, as both are the recipients of benefit. Post-graduate education increases the opportunity of the doctor to widen the field of his activities and at the same time assures the public of improved service.

One reason that I am certain that physicians should receive consideration over other professions in this problem of advanced education is that the medical profession is becoming more and more a public servant, devoting time, energy and money for which no means of recompense has, as yet, been provided. The effort to remedy this gap in our educational system in Michigan has resulted in a working agreement between our medical schools, organized medicine and the practising physicians, which promises much for the advancement and dissemination of scientific knowledge, improvement in the social and economic position of the medical profession as a group, and increasingly better methods in the care of the sick. No one can read the record of present activities in post-graduate medical education, as contrasted with but ten years ago, without being convinced that this phase of medical education is destined to become vastly more important than heretofore, and I am going to prophesy that in the course of another ten years, instead of being regarded as the poor relation in the household, post-graduate medicine will come to occupy a more dominant position.

Interested as I have been for so many years in the development of post-graduate education under the ægis of the University, you will understand how gratified I am at the progress that is being made through the recently organized Department of Post-Graduate Medicine under the direction of Doctor Bruce. The association with the Michigan State Medical Society in this enterprise has been very pleasing to me, for, as many of you know, next to my family and the responsibilities of my practice, the interests of the University and the medical profession are nearest to my heart. At times in the past the relations between the profession and our University Medical School and Hospital have not always been as happy as I should have liked. I am very hopeful at this time that the unity of interests incident to our present affiliations will result in a new

era in mutual understanding and helpful relationships.

Now as to the relation of the medical profession to the public, introducing a new subject, those who have given much study to these matters are agreed that the furnishing of adequate medical care to all of our people at a reasonable cost is the most important problem in the care of the sick. Lack of knowledge of disease prevention, treatment, and cure does not enter into this problem, for we have that knowledge. Our difficulty is in making it available. The actual cost of necessary care in illness is by no means prohibitive, for the total spent yearly by the American people is less than 3 per cent of our national income. Without increasing our outlay by a single dollar, medical care may be adequately provided. Estimating the average income at approximately \$2,000, it would not seem a great hardship to set aside \$60.00 for medical care. This is the proportion of income now being expended. Unfortunately, nearly one-third of this amount is spent uselessly and often harmfully for patent medicines, useless appliances and quack doctors. Michael Davis, in a recent study of medical cost, states that over fifty per cent of all the burden of sickness falls upon one-sixth of the population, so that some form of provision for sickness other than budgeting the income is suggested, probably some form of sickness insurance.

The Five Years Study of the Costs of Medical Care will add greatly to our present knowledge, but while looking hopefully to the conclusions of the Committee, might it not be well to consider some of the possibilities toward bettering our own position and helping the public to wiser ways in its search for health.

Quoting in part from Doctor W. C. Rappleye, "There are well recognized defects in present medical services. An important one is that of partitioning practice into organs, systems and technics, with consequent dispersion of responsibility for the patient as a whole which not infrequently turns out to be unnecessary, costly and misleading. This tendency has arisen partly out of the eagerness of physicians to provide up-to-date medical care, sometimes without realizing the limitations as well as the value of special laboratory, roentgen-ray and "expert" services, and partly from the demands of patients and relatives who think that roent-

gen and laboratory examinations, specialists, expensive hospital accommodations, consultants and special nurses are necessary to insure adequate care. There evidently is considerable unnecessary surgery done, quite often by physicians with little surgical ability or training.

"A part of the unnecessary cost also arises from the common practice of self-diagnosis and selection of specialists by patients. Frequently, it is not the services of an 'expert' that the patient needs. Shopping around among experts is likely to be expensive and probably has arisen, in part, because of the incomplete services which many physicians provide for their patients. Studies of the needs and demands for medical services seem to show quite clearly that about 85 per cent of medical needs are for six general groups of disorders, for the usual care of which a properly trained physician should have no difficulty. Some outside assistance is needed occasionally and should be secured on the advice of the patient's physician. Many patients do not need the services of specialists; patients, physicians, and the public should be made to realize that."

The relation of the general practitioner to the specialist has been economically difficult and subject to frequent abuses. This situation demands an appreciation by the laity of the value of the service rendered and a willingness to compensate for it. A division of fees is an ofttime harmful influence and tends to degrade medical standards. An effort is being made to discredit this evil and correct the practice. Just what the solution will be which properly recognizes the rights of the referring agent and encourages resort to skilled assistance is yet unanswered. The welfare of all parties must be considered.

While the profession has been for years apprehensive of "state medicine" and many worthwhile social movements have been deviated or retarded on this account, there is, I believe, much less danger of governmental interference in the affairs of the medical profession than in industry, for medicine has always stepped into the breach in great national crises, and has tried constantly to adjust itself to the needs of the everchanging social order. With one disease after another yielding to the steady advance of medical science, by comparison, how poorly, indeed, has the great octopus, industry, met its obligations! It has come into dominance ac-



accompanied by mal-adjustments and suffering, comparable only to the by-products of war and pestilence, and the unemployment periods are as regular and as devastating to life and happiness as were the famines and plagues in the earliest records of mankind. If the industrialist spent half the effort in an attempt to regulate production to the normally operating laws of supply and demand that is constantly being spent in the creation of a fictitious demand there would be much less probability of governmental interference in the problem of industrial overproduction, with its inevitable accompaniment of unemployment.

England is frequently referred to as an example of iniquitous medical legislation, which it is claimed places the doctor in a position of economical and professional servitude. In this case, as in many others, we have passed judgment upon a problem, in which our information is not only limited but which is not always in accord with the facts. No one is more thoroughly convinced than I that state medicine does not afford the answer to the many-sided problems which are presented at this time. However, before passing judgment, let us try to assemble some facts.

Notwithstanding many reports to the contrary, I have every reason to believe that the rank and file of the profession of Great Britain are much better off economically and professionally at the present time than before the passage of the National Health Insurance Act. Previous to the passage of the Act, there were in England over 3,500 so-called "Friendly Societies" whose operations were similar to those of our lodge practices so general in this country a few years ago. These had grown to such an extent that unless a man had an independent income which permitted him to wait through a protracted period for the establishment of a practice, he was literally compelled to affiliate with one of these organizations in order to maintain himself.

The economic difficulties incident to a population of one-quarter to one-third in excess of the country's ability to support it properly, together with the unsound conditions of medical practice, made it a simple step to the planning of state control, maintained by the combined contributions of employers, employees, and the state. Through governmental regulation a more

equitable distribution of patients and professional income was assured and the income of the practising physician was increased by about \$1,000 a year.

The principal point in this whole matter is that the general plan of service was really introduced by the doctors themselves through the establishment of the so-called "Friendly Societies." The British medical profession cheapened itself by the poorest of makeshifts in co-operative bargaining and this condition continued almost to the point of starvation for large numbers of the profession until the government stepped in and solved the problem for them.

In considering our many-sided problems, we are too often getting "the cart before the horse" and found applying a placebo or giving symptomatic treatment when a more careful study would reveal the availability of a specific. In estimating the cost and inadequacies of medical care, must not industry as a cause of incapacitating conditions both immediate and remote come in for its full share of responsibility? In its ruthless quest for dominance, it is only natural that industry should seek to make medicine its servant, and in a great measure it has succeeded, but there is more likelihood that industry, rather than medicine, will eventually come under the control of the state. Unless the craze to produce, to distribute and to oversell, with its inevitable cycle of seasonal unemployment and economic distress, be curbed by industrialists themselves, governmental regulation will be more necessary and of more specific benefit than will any attempt at the socializing of medical practice.

Medicine is more than ever before a career of public responsibility in all of its branches. The power for good of the knowledge available for us is balanced by the dangers of our ignorance; the confidence of our fellows which enables us to console endows us with extraordinary powers to deceive. The work we do infiltrates with its influence the destinies of individuals, families, communities and nations. To be effective we must develop a type of practical philosophy of work—a sensible idealism, which without expecting the impossible of our own frail humanity—or that of others—will ever keep before us the true purposes of our profession.

## THE LEGAL ASPECTS OF X-RAY

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Many uses have been found for the X-ray within the comparatively short time since its discovery and especially within the last ten years. It is now used extensively in chemistry, physics and allied sciences, both experimentally and commercially. However, as there are so far no legal opinions involving the use of X-ray except those pertaining to the human body, the legal aspects of X-ray are more or less confined to three main divisions, namely (1) Liability arising out of the use of X-ray, either for diagnostic or therapeutic purposes, (2) Liability arising out of failure to use the X-ray, and (3) X-ray plates or films as evidence.

The courts do not seem to have advanced with X-ray as a whole for there seems to be some difficulty in getting past the elementary problems of the field. They have progressed in the manner in which the science is applied, but the problems presented do not take the wide scope that might be expected from present day usage.

From a medical standpoint the opinions rendered in cases involving liability due to negligence are instructive. From the legal side those in which films were used as evidence present a variety of technicalities and diversified opinions. The respective laws governing such evidence in the various states differ only slightly.

The State and Federal rule regarding physicians in general is as follows: "A physician is bound to bestow such reasonable and ordinary care, skill and diligence as physicians and surgeons in the same neighborhood, in the same general line of practice, ordinarily have and exercise in like cases." The physician is not an insurer and cannot be held liable for a bad result unless proof of negligence is produced. In the case *Evans vs. Clapp* (Mo. App. 1921), 231 S. W. 79, it was said, "The standard care in the use of X-ray machines must be derived from the users thereof, and the term similar localities must in this connection have a general and somewhat relative meaning," but the Supreme Court in New York in 1918 says, "In the case of a specialist the standard would be ordinarily that possessed by practitioners devoting special attention and study to the same branch in similar localities, having regard to the present state of

medical science," and determining the degree of skill required it is stated in *Pike vs. Honsinger* (1898), 155 N. Y. 201, 210, that "he is bound to keep abreast of the times." Therefore there can be no urban and rural rule for the use of X-ray as there is for the general practitioner who is negligent if he does not use the care and skill of the community. X-ray is not used under circumstances of emergency as other measures sometimes are, so a higher standard is possible in this field.

Laymen, doctors and lawyers are familiar with the fact that pioneers in X-ray were unduly exposed and suffered the consequences of their ignorance of the destructive powers of the agent with which they were working. The manufacturers of equipment have been untiring in their efforts to provide protection for the operators. Since mechanical improvements have been made there has been an increase in the accuracy in methods of estimating the output of various makes of machines. Research and experience has prescribed dosages to be administered, but notwithstanding this fact, there is yet an inherent danger from X-ray. Because of the multiplying number of machines sold, and used by doctors, laymen, and practitioners of the various cults, many of whom are without training, except for a short period of instruction by the salesman, the actual danger from X-ray is perhaps even greater than it was a few years ago. Due to the fact that X-ray has proven itself to be of untold value in many cases the laity has learned to request its use. Its invisible properties have such an appeal that in the hands of the unscrupulous the X-ray is unduly exploited as a source of revenue only. Therefore, an increased number of

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patients in the hands of a large number of untrained operators necessarily increases the proportionate risk. In regard to the dental profession, Dr. Raper, an authority on dental radiography, first advocated that each dentist do his own radiographic work, but now has assumed an entirely opposite stand and writes "but as dentists take up the work I am appalled at the ignorance and carelessness displayed." Aside from the damage done patients due to misinterpretation of radiographs by those not well versed in reading films there is the danger of injury to both patients and dentists from over-radiation. X-ray has at the present time a definite place in therapeutics, and dosages can be computed with as much accuracy as certain drugs. State laws regulate the sale and administration of drugs but very few states devote any attention to limiting the indiscriminate use of X-ray. In all of the states, the practice of medicine without a license is a misdemeanor and punishable by fine or imprisonment or both. The New York statute regulating medical practice applies to "every means and method that could be used or claimed to be used to relieve or cure disease or infirmity unless excepted by the statute." An X-ray operator is therefore practicing medicine and must be licensed. Superfluous hair is a deformity under the laws of the same state and its removal by means of X-ray with the possible danger of discoloration or subsequent telangiectasis is in violation of the medical practice act.

Most of the malpractice cases fall under the head of negligence but there are three other sources of liability which must be considered: (a) Cases in which the operator guarantees no harm, (b) the fact that X-ray is inherently dangerous, and (c) electrocution from high tension current.

The American Roentgen Ray and Radium Society and the Radiological Society of North America have for many years maintained committees on safety and standardization. The former has attempted to formulate suggestions for safety and these should furnish the courts with a standard test for negligence. The Roentgenologist has already been recognized by courts as highly specialized and is considered independent of any school of healing and should not be held to the standard care limited to the community. In liability arising out of the application of X-ray as a therapeutic agency, the burden of proof lies with the plaintiff.

In the case of *Holt vs. Ten Broeck*, 134 Minn. 458, 159 N. W. 1073, Ann. Cas. 1918 E 256 (1916), "In determining negligence it can make no difference whether the one operating the machine is a physician or a lay expert. The care required is ordinary care. It is the care exercised by and to be expected from one reasonably skilled in the use of the appliance. The rays were not applied for curative purposes but to obtain information." This is a case dealing with injury following exposure for diagnostic purposes. Such cases are now rare and should not occur at all since the advent of intensifying screens and high capacity tubes. It should not be necessary for a good technician to make numerous exposures in order to obtain films of diagnostic quality. In institutional work, whether the physician is employed by a charitable institution or a private group, he is responsible for acts wherever committed, according to the Michigan Law. If the physician is employed by a corporation, the corporation is not liable if they have used the best judgment in employing such a physician. Many corporations throughout the country employ physicians and in some cases part of their medical duties include whatever X-ray work is considered necessary. Charitable institutions are said not to be liable to patients injured in regular course of treatment, but this rule does not extend to other than charity patients taken care of at the same institution, nor is the physician personally relieved of responsibility. (*Marble vs. Nicholas Senn Hosp.*, 102 Neb. 343, 167 N. W. 208, 1918.) The following quotation should be of interest to physicians devoting part of their time to radiology and to such work in hospitals. "If a physician undertakes the treatment of a patient unable to compensate him, his liabilities for negligence or malpractice are the same as in the case of any other patient."

The insurance companies carrying malpractice insurance now have a clause in their policies stating that they are not liable for suits brought about by damages after X-ray has been used for therapeutic purposes. Many general practitioners using machines are not aware of this nor does the salesman selling the machine point out this fact in his policy. It is indeed questionable whether some of these men do any damage as they make as few exposures as possible and as practically all of the so-called burns occur from therapy. The gen-



eral practitioner who is required to do therapy under exceptional circumstances should proceed carefully. Sometimes he is situated in an isolated community so that any X-ray work he may do, either diagnostic or therapeutic, is better than none at all. X-ray therapy malpractice insurance can be secured at high rates but it is obvious that the insurance companies consider the procedure dangerous and do not encourage every policy holder to attempt such a form of treatment.

The opinion handed down in the case of *Runyan vs. Goodrunn* (1921), 147 Ark. 481, 228 S. W. 397, 13 A. L. R. 1414, dealing with liability for injury by X-ray, says it was the defendants' duty "to exercise ordinary care to see that this department was equipped with such apparatus as was generally approved by roentgenologists as best adapted for the proper diagnosis and treatment of diseases; also to exercise such care to provide competent specialists to do the work in that department . . . the X-ray machine . . . operated by a competent expert is of inestimable value to mankind but otherwise it is an exceedingly dangerous agency." In the case *Sweeny vs. Erving* (1910), 35 App. D. C. 57, 43 L. R. A. (N. S.) 734, 228 U. S. 233, 35 S. Ct. 416, 57 L. ed. 815, the court seems to assume that anyone licensed to practice the healing arts should have a full knowledge of all branches of medicine and surgery. No recognition is given to any special training in the various fields. The following is taken from the above case: "The use of X-ray in diagnosis and treatment of disease is recognized and practiced by the medical profession. Such being the case we see no reason why a different rule should apply to practitioners in this line than is applied to other practitioners. The operator of the machine being a physician is irrelevant. It must be determined for what purpose X-rays were used. Only in treatment should the test of best judgment apply."

In some instances the presence of an X-ray burn has been satisfactory evidence that negligence did exist, the rule evidently being that proper equipment properly used produces no burn; in other words, "the thing speaks for itself" principle having been applied. A ruling of "res ipsa loquitur" contrary to the weight of opinion is given by the Supreme Court of Minnesota, *Holt vs. Ten Broeck* (1916), 134 Minn. 458.

159 N. W. 1073, Ann. Cas. 1918 E 256. This is a jurisdiction that permits the jury to draw an inference of negligence in such cases and to consider and weigh the inference in the light of the facts and circumstances and to give it such weight as they deem it entitled to in proving negligence. However, in *Sawyer vs. Berthold*, 116 Minn. 441, 134 N. W. 120 (1912), the court said, "It is undoubtedly correct that negligence of a physician and surgeon cannot be inferred from a poor result alone. There must be evidence from expert witnesses tending to show improper and unskillful treatment in order to sustain a charge of malpractice. A case has already been cited and approved in the District of Columbia (*Sweeney vs. Erving*) in which the plaintiff asked the court to instruct the jury that the burn in itself was sufficient evidence of negligence. The court refused and the plaintiff based her appeal on the failure of the defendant to warn her and for other reasons. In the answer to the appeal the court says, "Generally speaking no inference of negligence can be drawn from the result of the treatment of a physician or surgeon . . . the same rule should apply to practitioners using X-ray as to other practitioners."

The presence of a burn has not generally been satisfactory evidence that negligence did exist. It seems proper to take into consideration the fact that plaintiff was burned, together with the fact that it is possible to use X-ray without burning and that the burn is evidence of some negligence, even if the result of a cumulative effect, but that it is in itself insufficient evidence unless the burn was so severe that no reasonable application could have produced it.

Unusual sensitiveness, idiosyncrasy to X-ray, and similar conditions have not been scientifically demonstrated and cannot be determined by known methods. It is a recognized fact that blondes are slightly more sensitive to X-ray than brunettes. The case of *Antowill vs. Friedman* (1921), 197 App. Div. 230, 188 N. Y. S. 777, recognizes the condition of hypersensitivity, "it having been proven that that specific result might come from proper treatment without negligence . . . that is, in the case of a hypersensitive person." This case involved diagnostic work instead of X-ray therapy. The court held in *Hunter vs. Burroughs* (1918), 123 Va. 113, 96 S. E. 360, that the plaintiff must

prove extreme susceptibility, and must prove that the condition was known to the defendant or could have been discovered by a reasonable examination. The court held that the physician must look for normal and probable results. It rests with the jury to determine whether the defendant had knowledge of the possibility of idiosyncrasy and whether he used due care and diligence in the light of such knowledge. In *Kuehneman vs. Boyd* (1927), 193 Wis. 588, 214 N. W. 326, we find, "It appears uncontradicted by the expert testimony that an X-ray burn is due either to an overdosage or to a hypersensitive skin, and there is no way of diagnosing in advance whether the skin of an individual is hypersensitive to the X-ray." Absolute certainty that injury resulted from negligence is not required,—proof which satisfies the jury's mind to reasonable certainty being sufficient. And it may be said here that any admission on the part of the physician which may be interpreted by the patient or jury that the injury was the result of some error in technic may be this "sufficient proof." The standard of skill, care and diligence required of an X-ray operator is not fixed by the ipse dixit of an expert but by the care, skill and diligence ordinarily possessed and required in the same line of practice in similar localities.

The first case involving liability for failure to use the X-ray was in 1910, *Wells vs. Ferry-Baker Lumber Co.* (1910), 57 Wash. 658, 107 Pac. 869, 29 L. R. A. (N. S.) 426. "Whether it is negligent not to have used the X-ray is a question which the jury must determine with the aid of expert testimony. It is not negligent if diagnosis can be made without it. First we must consider the availability of the machine" and we may add whether the operator of the nearest machine is competent to interpret findings not disclosed by other examinations. It certainly is not negligence for a physician not to have a machine in his office. Failure to use the X-ray in treatment is only an error in judgment and not actionable. There is some suggestion that in case of doubt it is negligent not to use the X-ray, and development seems to be in this direction. In a recent case in the Common Pleas Court of Cuyahoga County, Ohio, it appears from the evidence that experts testified that it was customary and usual to use X-rays in the reduction of fractures of the bones of the limbs. The Court of Appeals in affirming

the judgment said, "We have gone over the whole record of this case and we can come to no other conclusion than that the jury was justified in finding a verdict against the attending physician, and we think that the evidence is ample in the record that he did not use the usual and recognized methods of determining just how this bone could be set." Also in the case *Blex vs. Flack et al.* (1926), 121 Kans. 431, 247 Pac. 640, the Supreme Court of Kansas in affirming judgment against the defendant says, "On the suggestion that a roentgenogram of the arm be made the defendant advised that it was not necessary. The court thinks the evidence sufficient to show that he failed to exercise that reasonable care and skill which the law requires of one of his profession, and that the bad condition in which the arm was left was the result of his negligence." Another decision which has been quoted on various occasions is that of *Taylor vs. De-Vaughan* (1928), 91 Cal. App. 318, 266 Pac. 960. The evidence showed that X-ray examination of the leg of the patient was requested by his parents but they were advised that such an examination was not necessary. The patient was moved to another hospital and later examined by means of the X-ray, which showed the ends of the fractured femur overlapped approximately two and one-half inches. The defendant testified that he had measured the legs with a steel tape and found them both to be straight and of equal length. Other witnesses testified that such measurement is not a sufficient guide to determine whether or not there has been slipping or side movement at the line of fracture. They also testified that tilting of the pelvis may be misleading when measurements such as described are made. The court found the defendant negligent and that he had failed to exercise reasonable care and skill in the following particulars: He had failed to take X-ray pictures to ascertain whether the fracture had been properly reduced, or after the patient had been moved whether there had been a change in position and that he had X-ray examinations made only after repeated demands of the patient's mother and not by reason of correct or reasonably careful diagnosis. And another case, *Whitson vs. Hillis* (1927), 55 N. D. 797, 215 N. W. 480, which dealt with a case where claim for damage was based on the allegation that the physician had failed to diagnose a fracture

in its proper location but after prolonged treatment for fracture in another location had discovered the original fracture. The findings were that "the jury may draw inference that physicians in constant attendance, and in exercise of due care, would not treat a patient for so long a period and fail to make such examinations and tests as would locate the seat of the trouble."

The Journal of the American Medical Association, April 14, 1923, discussing in the medico-legal section a case in the Supreme Court of Minnesota, in which the decision was in favor of the plaintiff, states that "negligence in respect thereto was charged against the defendant, particularly in that he took no roentgenograms to aid in the diagnosis of the fracture or in ascertaining its condition during curative process," and in the issue of July 28 of the same year this paragraph is found, relative to a case in the Court of Appeals of Kentucky. "One could not read the record without being forced to the conclusion that the defendant was negligent in at least one particular of not sooner making a Roentgenogram of the elbow so as to enable him better to treat it thereafter."

The Journal of the American Medical Association, August 21, 1926, in commenting on the annual report of the Committee on Medical Defense of the Iowa State Medical Society, in which report it states that half of the suits brought were based on fractures and dislocations, says, "A physician's failure to avail himself of roentgen rays in the diagnosis and treatment of what is a possible fracture or dislocation is not conclusive evidence of neglect, but a physician armed with a roentgenogram can defend himself much better than one who must rely on certain evidence. In other words a physician in a city, or near a city or hospital where X-ray consultation did exist, would be considered negligent if he did not avail himself of the opportunity to use it, while another physician with an isolated country practice would not be so considered from his failure to use the X-ray."

If there is negligence in failure to use the X-rays then there must be diligence in using them. This is brought out legally in another way in the case of *Van Tinker vs. Birmingham Railway Light and Power Co.* (1919), 202 Ala. 474, 80 Sou. 858. Motion for a new trial was based on an allegation of newly discovered evidence disclosed by an

X-ray examination subsequent to the hearing. The court said, "It is a matter of common knowledge that in cities the use of X-ray for the discovery of internal injuries and abnormal conditions of the human body is of common occurrence . . . if such a plate should have been worth while as a means of revealing the true condition at the time of the suit due diligence had not been exercised in obtaining evidence."

It is worthy of note that within a year after Professor Roentgen's discovery, the first legal case appeared in America (*Smith vs. Grant*, 29 Chicago Legal News 145, Dec. 3, 1896. A plate showing the head and neck of the femur bone was admitted as evidence. The Haynes murder trial in 1897 in Watertown, New York, is the first criminal case in which X-ray evidence was used (56 Alb. L. J. 309, 15 Medico-Legal Journal 246, Oct. 1897). In this case a plate was offered to show that a foreign body was not a whole bullet.

In the legal world it is most important to the jurist to be conservative since the introduction of radical changes might later result in conflicting and unfair opinions. It may be said that since its introduction X-ray evidence has changed from "timorous acceptance" to "implicit trust." The first objection to plates was based on their inherent weakness and fallibility. Experts testified that nobody knew anything about X-ray and the court ruled that juries could not be misled by something admittedly an experiment. Within twenty years after its introduction, the courts treated X-ray as self-authenticating (*Prescott vs. Franks* [1914], 111 Ark. 83, 163 S. W. 180, Ann. Cas. 1916 A 773 and note 1914). "It is now a well recognized fact that by proper apparatus a picture of the bones of the human body may be obtained that will more or less define the skeleton and show any injuries."

The lawyer must know something of every branch of science and business. Sad though it may seem, many lawyers know more of the capabilities and possibilities of X-ray than a number of the medical profession. The lawyer and medical man alike should know that after X-rays pass through the human body, or any other object, they have the property of affecting a photographic plate or film and that after proper chemical treatment this film becomes a permanent record of the different densities through which the rays have passed. Al-



though the film passes through some of the process of a commercial photographic plate it is not a photograph at all but a record of shadows comparable to shadows cast by ordinary light. That X-ray shadows become visible when a fluorescent screen is interposed between the source of these rays and the observer is also, we hope, common knowledge to the professions.

The lawyer and doctor must realize that X-rays have destructive as well as curative properties and are an extremely dangerous agent, not to be used by amateurs, or those unversed in the underlying fundamental principles of physics involved, any more than major surgery should be attempted by the untrained medical graduate. One case is cited in which an X-ray burn was the cause of death (*State vs. Lester* [1914], 127 Minn. 282, 149 N. W. 297, L. R. A. 1915 D 201), and in sustaining an indictment for manslaughter by careless application of X-rays, the court took judicial notice of their extremely dangerous nature.

To the lawyer the field of X-ray includes evidence which to him may be only a picture and to be used as testimony for the purpose of obtaining truth. X-rays are still spoken of as pictures and for this reason it seems to have been customary for the lawyers to relegate the X-ray films to the category of ordinary commercial photographs, even though some consideration was given to their true nature and function. Courts have been influenced by the fact that the plates or films produced have been called pictures and had been processed the same as a snapshot. There is no reason for complaint about the standards of admissibility established, for it is clear that their truth and accuracy are sufficiently protected by the tests applied to ordinary photographs (*Eckles vs. Boylan* [1907], 136 Ill. App. 258) and these tests have practically been transferred from the old category to the new. Courts accept the evidence as a picture but do not ask "a picture of what?" for it is apparent that the importance of having such a picture interpreted has been slow to gain ground. As has been stated the same shadows may be seen on a fluoroscopic screen as can be produced on a film, the latter being a permanent record which may be filed, studied and compared with subsequent films while the fluorescent shadow disappears as soon as the X-ray producing energy is cut off. X-ray does not

affect any of the special senses and therefore has no visibility and the shadows are visualized only as long as the chemical on the screen is excited. The rules applying to the admissibility of photographs were adopted for X-ray films not because the two were identical but that the same precautions used will be a sufficient guarantee of reasonable truth and accuracy. Photographs may be admitted if a person familiar with the facts portrayed testifies that the picture is correct, or may be admitted if proof is established that the process that produced it gives correct pictorial results. A photograph becomes admissible upon proof of its intrinsic accuracy or the accuracy of the process which produced it, that is, reasonable accuracy to inform the jury, assuming that all basic precautionary rules of evidence have been applied. "When the accuracy of X-ray photographs is proven they are competent and should be admitted." (*Ligon vs. Allen* [1914], 157 Ky. 101, 162 S. W. 536, 51 L. R. A. [N. S.] 842.) Some courts suggest "mechanical record" as a term better suited to X-ray films as evidence than the word "picture."

Photographs are competent evidence to aid the jury in better understanding the situation than it could if the condition were described by oral testimony of witnesses. They stand so far as their credibility is concerned upon the same basis as maps or diagrams do. Their correctness is not irrefutable. In each case their correctness depends upon the reliability, accuracy and skill of the person making the diagram or taking or developing the photograph. The correctness of a photograph is not wholly dependent on the action of light. The effect is not in all cases recorded with like results, and these results depend upon the efficiency of the camera and the efficiency of the operator. He may be an expert or an unskilled amateur. It cannot be disputed that the photograph rests upon the human testimony as to its correctness and when unverified carries no conviction as to its correctness (*Higg vs. St. P. and S. St. M. R. R. Co.* [1908], 16 N. D. 446, 144 N. W. 722, 15 L. R. A. [N. S.] 1162, 15 Ann. Cas. 97).

The courts have apparently transferred bodily to radiographs the rules relative to photographs and the general tendency to refer to them as secondary evidence has been fairly consistent. A radiograph is not self-authenticating but must be verified by evi-

dence and the court must be satisfied that it represents a person or thing material to the issues of the case. In *Ligon vs. Allen*, (1914), 157 Ky. 101, 162 S. W. 536, 51 L. R. A. (N. S.) 842, "If no witness has thus attached his credit to the photographs then it would not come in at all any more than an anonymous letter should be received as testimony."

The process by which a radiograph is produced is often open to question and since reliance as to its credibility and competency rests on this issue, the judge must take into consideration all details. It has been customary to admit a radiograph made by a technician who verifies the technic which produced it, and then a physician, surgeon or roentgenologist may testify as to its accurate portrayal of the existing condition. In the opinion *Bruce vs. Beal* (1897), 99 Tenn. 303, 41 S. W. 445, the court says, "It is understood, however, that every picture taken by the cathode or X-ray process would be admissible. Its competency, to be first determined by the trial judge, 'depends upon the science, skill and intelligence of the party taking the picture and testifying with regard to it, and that lacking these important qualifications, it should not be admitted.'" That is, the introduction of a negative is not sufficient but the ability of the operator to produce it or interpret it must be established, and also that there is no misrepresentation by retouching, distortion or improper position of the subject, plate or tube and that proper identification marks are placed upon it. Cross-examination is the lawyer's protection in this regard. A decision in *Bartlesville vs. Fisher Zinc Co.* (1916), 60 Okla. 139, 159 Pac. 476, lays down a rule which raises the standards of admissibility to a class of radiological experts and ignores technicians. "The X-ray plates must be made the part of some qualified witness' testimony and the witness should qualify himself by showing that the process is known to himself to give correct representations and that it is a true representation of such objects." There does not appear to be any foundation for the requirement that admission shall be laid in the testimony of one witness. Most roentgenologists, specialists in the field, rely upon laymen for a large part of their technical work. In some states lay technicians conduct private laboratories for making films, and in some cases diagnose diseases and administer X-ray therapy. If this is in viola-

tion of the Medical Practice Act of the state such laboratories submit the films to the referring physician and he interprets them. No ruling can be found as to whether such operators may give expert testimony in court relative to the abnormalities demonstrated on the films. Some of the cases reviewed in the preparation of this paper revealed the fact that the X-ray examinations were made by men who were not graduates of schools of medicine and surgery.

Radiographs are not inadmissible merely because a considerable period of time has elapsed between the time when the condition at issue is alleged to have arisen and the time when the radiographs were made. The length of this interval bears only upon the weight of the evidence, and not upon its competency.

While there is a certain uniformity among decisions as to the manner in which a plate shall come into evidence there is uncertainty as to what shall be done with it. An X-ray plate to the general public is an X-ray plate and when presented as evidence the question does not arise, "Is this a good film or plate?" or "Is this the best film that can be made portraying the condition under question?" Some films exhibited and admitted show nothing distinguishable even to experts because the diagnostic quality as a point in admissibility is not tested. Often the question arises whether the film shall be shown to the jury. Shall experts explain it, or shall experts disclose what the film shows without showing the film itself? Shall normals be shown to contrast with the abnormal? The two following cases will tend to show what disposition was made of the above mentioned questions. In the case *Kavale vs. Morton Salt Co.* (1928), 329 Ill. 445, 160 N. E. 752, the defendant contended that it was an error for the trial court to permit certain roentgenograms that had been introduced, to be taken to the jury room, because, he argued, they were unintelligible to the average juror. The Illinois Practice Act provides that "papers read in evidence, other than depositions, may be carried from the bar to the jury." And further upon the subject the following case (*Chi. and Joliet Electric Ry. vs. Spence* [1904], 213 Ill. 220, 72 N. E. 796, 104 Am. St. Rep. 213) shows that roentgenograms must be identified as true representations of their subject, as is the rule with reference to photographs. They cannot be read as evi-

dence until proper proof of their correctness and accuracy is produced. The Supreme Court of Illinois has not held, however, as a matter of law or fact that all roentgenograms are unintelligible. In *Gastiger vs. Horowitz* (1927), 221 N. Y. S. 481, 220 App. Div. 284, the Supreme Court of New York, Appellate Division, affirms an error in judgment in allowing an X-ray specialist to testify from notes only and states that the physician should not have been allowed to testify at all. He made no claim that he took the roentgenogram. The plate was not produced and no satisfactory accounting was made for its absence. The physician stated that he examined a plate with a name and number on it and made notes. All that he testified was that the plate showed a broken arm. This finding was not disputed by clinical examination experts. The Appellate Court found no good reason to reverse the decision but stated that incompetent evidence had been admitted. Again the rule of the ordinary photograph applies: "An ordinary photograph is the best evidence of what it contains and parol evidence on the subject is not admissible without accounting for the failure to produce the photograph itself."

The question of what is best evidence is a question of fact. Therefore, normally, photographs or plates are the best and most reliable evidence for they present to the jury a fidelity and accuracy not possible in verbal narration, and summarize the facts. But when the average information and knowledge of citizens subject to jury service is considered, one realizes how limited is their knowledge of anatomy and how little can be relied on their ability to pass judgment on an X-ray film. Many physicians are not well enough versed in the subject to recognize a normal joint, so why ask a layman to be able to understand anything except a complete fracture of one of the long bones. He does not know whether the film is a negative or a positive or whether a line of fracture should show as a white line or a dark line. Shadows of lines in the skull are confusing, and to the laity a spine or pelvis is a veritable puzzle. X-rays are not infallible and their fallibility lies not in the process of making but in the human equation involved. To read a plate or film properly one must have a knowledge of normal conditions and how they appear, and to be able to read with any degree of accuracy one must know anatomy, osteology, physi-

ology and pathology, both normal and altered. A basic knowledge of the normal is required in order to identify the pathological. Even with this training there is no positive guarantee that the plate will be read accurately. Undoubtedly there has been a great abuse of the X-ray in the court room and incompetent evidence has been allowed due to the fact that unskilled men have misinterpreted the findings disclosed or the films were not the best obtainable to properly demonstrate the existing condition. The X-ray film is not always the final and last word in making a diagnosis. There may be injury to the soft parts, possibly a permanent damage, but the X-ray will appear normal. Then there may be bony changes, arthritic, for example, which existed prior to an injury, and have no bearing on the case at issue. The case of *Reeder vs. Thompson et al.* (1926), 120 Kans. 722, 245 Pac. 127, renders the opinion that roentgenograms are to be classed as objective symptoms. "What the physician discovers through his vision aided by the magnifying glass or a roentgen instrument, are objective symptoms. By the use of the roentgen ray a view may be had of the internal conditions not perceivable or to be had by the ordinary or unaided senses. The sense of sight is enlarged by its use, and, although a recent invention, its use is now common, and what it reveals is generally recognized and accepted. Of course, the instrument should be one that is trustworthy and the operator competent."

A power of observation is developed through long experience and from viewing a large number of films of varying multiplicity, the same as experience teaches the physician or surgeon by hearing through the stethoscope or by manual palpation, and for that reason only simple X-rays will not mislead the jury even if normals are shown by contrast.

In the case of a skull fracture or multiple fractures when experts cannot agree or in any difficult films one can apply an objection raised in one of the early cases, when the technical perfection was in its infancy. "It is argued" in *Miller vs. Dumon* (1901), 24 Wash. 648, 64 Pac. 804, "that the witness instead of being permitted to express an opinion that the bone of a leg was fractured, should have been confined to explaining what appeared upon the negative indicated a fracture, and leave it to the jury to determine from the negative whether these



appearances were there or not." This objection was overruled as the opinion formed was of the same nature as any medical testimony.

Judge Howard (*Marion vs. Coon Constr. Co.* [1915], 157 App. Div. 95, 141 N. Y. S. 647, affirmed 216 N. Y. 178, 110 N. E. 444) said "I do not think that the doctrine that an ordinary photograph is the best evidence of what it contains should be applied to X-ray pictures. They constitute an exception to the rule concerning ordinary documents and photographs, for the X-ray pictures are not the best evidence to laymen of what they contain. The opinion of the expert is the best evidence of what they contain—the only evidence."

In the case *Davis vs. Boston Electric Co.* (1920), 235 Mass. 482, 126 N. E. 841, a firearms expert testified that the object shown on a film, admitted as evidence, was the shadow of a bullet.

This is an example of a lay expert testifying that the film represents a true story of the existing condition but the testimony was limited to his field of knowledge. A person may be able to make an X-ray examination, that is a technician can produce films of diagnostic quality, but they may not be an expert witness when interpretation of the findings is considered. In the case *Liles vs. Hannah Pickett Mills* (1929), 197 N. C. 772, 150 S. E. 363, an X-ray film was offered as evidence and the judge expressed his willingness to admit the photograph provided expert testimony was introduced satisfactorily explaining it to the jury, but held that the witness who had made the film had not qualified himself sufficiently expert in questions of anatomy to testify. Upon this finding the testimony was properly excluded and upon appeal the finding was that no error had been committed. And along this same line of reasoning the late Chief Justice Wm. H. Taft said in *Ewing vs. Goode*, 78 Fed. 442 (1897), "When a case depends on a highly specialized art with respect to which the laymen can have no knowledge at all, the court and jury must be dependent on expert evidence—there is no other guide."

Although there have been numerous injuries and deaths to employees of hospitals and also to patients due to coming in contact with high tension wires leading to X-ray tubes, no record of any of these cases can be found in the courts. Evidently no action was started in any of these cases of acci-

dental electrocution but, nevertheless, such a happening in any laboratory presents the problem of liability, either through negligence in improper installation or in positioning the tube too near the patient.

The proprietorship of the films has been an oft discussed question but apparently has never been carried to the higher courts. Several quotations refer indirectly to the question, and one from a Massachusetts case says "there was undisputed evidence that the X-rays taken in the hospital, as these rays were, are considered hospital property; hence they are not taken except on order of the physician or surgeon, that the X-ray pictures are indexed and numbered as part of the hospital record, that from the pictures the radiologist makes findings in writing, which are a part of the X-ray laboratory records and held there as a part of the records of the hospital." In the absence of an express agreement the same question has arisen relative to photographic plates. Courts have held that the negative is the property of the photographer (*Corliss et al vs. Walker* [1894], 64 Fed. 280, 31 L. R. A. 283), subject to certain restrictions to its use. The disposition of the prints rests with the "sitter" and any exhibition of either prints or negatives invades "personal privacy." There must be proof of a definite understanding between the parties involved whether intermediate products are to be turned over to the one photographed. Resolutions adopted by the Radiological Society of North America expressed the sense of the society "That all roentgenograms, plates, films, negatives, photographs, tracings or other records of examinations are the property of the roentgenologist who made them or the laboratory in which they were made." The roentgenologist acts as a consultant and in obedience to the professional code of ethics is not to make known any findings or conclusions to the patients, relatives, friends or anyone directly or indirectly connected with the case other than the requesting physician. General acceptance by the profession of these principles and existing rules in many hospitals will go a long way if ever this question comes before the courts. When a patient presents himself for an examination he agrees to be examined in whatever way may be necessary to make a diagnosis and there is no reason to assume that he owns the films any more than there is reason to believe that he owns the dictating machine

cylinder the doctor used in making the report or to ask that his temperature chart be turned over to him when he is discharged from the hospital. Some laboratories have a rule, a copy of which is on their receipt, stating that films may be demonstrated to patients on written consent of the referring physician and are open to inspection to any reputable physician who may show a legitimate interest in the case, or subject to subpoena the same as any other hospital records.

A study of the Index of the American Legal Digest System will convince any one in a short time that not only do the malpractice cases increase in number each year, but each year a greater number involve the use of X-ray in some manner.

Strange though it may seem, the largest number of decisions in cases involving X-ray in court are to be found in the States comprising the Mississippi Valley, with Iowa, Minnesota and Illinois predominating. Geographical consideration must also be given to Texas as a large number of cases are recorded there. Very few cases are found, as would be suspected, in the industrial centers where perhaps the greatest number of accidents occur. This probably is explained by the fact that X-ray examinations have proven their worth in compensation claims. Then too, a large number of the suits are brought alleging that a "burn" has resulted by reason of treatment, and X-ray therapy is rarely indicated in industrial surgery.

A recent issue of *Radiology*, the official publication of the Radiological Society of North America, reproduces a series of suggestions issued by a company handling malpractice claims. These suggestions are worthy of note:

1. Make no admissions of liability on your part. Let your responsibility be determined by legal standards.

2. Refrain from making remarks about any other doctor's work. Without doubt this

is a common source of instigating malpractice litigation, and most such remarks are thoughtlessly made.

3. Keep accurate record of dates and nature of all treatments rendered.

4. The importance of X-ray examinations in the diagnosis of any possible bone injury, and before and after reduction of fractures, cannot be over-emphasized. It is becoming increasingly difficult to defend such cases without full X-ray records.

In conclusion it may be said that it is obvious that by "exercising the ordinary care, skill and diligence to be expected of one of the medical profession" the operators of X-ray machines and physicians and surgeons in general can certainly lessen the number of cases involving any of the legal aspects of X-ray.

NOTE: This article has been made as brief as possible and yet every effort has been made to incorporate all questions involved. While only those cases best bringing out the point desired are quoted, many similar decisions can be found. Inclusion of a great number of legal references was purposely avoided so as to treat the subject from a medical viewpoint instead of from the legal side.

Grateful acknowledgment is made to Prof. Evans Holbrook, Law Department, University of Michigan, for his assistance with the legal references in this paper.

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## INFARCTS OF CARDIAC ORIGIN\*

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Thrombosis in the circulatory system is the primary factor in the production of infarcts, the occurrence of which is always a serious chapter in medical experience. The surgeon has many of his apparently most promising cases snatched away from him at most unexpected moments. The internist who deals with many cardiac cases also meets with this serious complication when least expected.

Many surgical patients die suddenly of pulmonary embolism resulting from thrombosis located in veins leading from the surgical field where stasis of the blood stream or injury to the veins has occurred as a result of surgical manipulation. Included in the surgical cases are many that entered the operating room with cardiac pathology. In these cases the strain on the heart from shock and after-effects of a major operation may induce the formation of thrombi in one or another of the cardiac cavities from which emboli enter the pulmonary or systemic circulation, according to location. The internist meets thrombosis and its subsequent accidents in certain types of advanced cases of cardiac pathology which we will attempt to describe. This study will not include coronary thrombosis.

Post-mortem statistics strongly suggest that the greater percentage of infarcts are of cardiac origin. The next most common location of thrombosis is in the first portion of the aorta. P. Bull<sup>1</sup> of Oslo has no doubt made the most extensive study of location of thrombi and the distribution of infarcts in recent years. He reports the occurrence of 181 infarcts of extremities found in 6,140 autopsies. Thrombosis was found in the right heart 67 times, in the left heart 63 times, and in both sides 51 times. The relative frequency of thrombosis in both sides of the heart explains infarcts in both pulmonary and systemic circulation in the same individual. The right auricle was most frequently found to be the seat of thrombosis, then the left ventricle, left auricle, and last the right ventricle. Thrombosis on the valves was demonstrated in 73 out of 6,140 examinations. The aorta is another important seat of thrombosis and occasionally some of the smaller arteries, but in 243 cases of thrombosis only 9 were found in the aorta and nearly all of these on advanced atheromatous patches. Thrombi in pulmonary veins were found only three times in the series and then only in connection

with thrombotic matter in the left auricle. Emboli in the peripheral circulation were often complicated with emboli in other organs such as lungs, kidneys, spleen, brain and intestines. There is a possibility of thrombus in either side of the heart producing infarcts in both pulmonary and peripheral circulation when a patent foramen ovale exists. These cases are, of course, very rare. In general, it is important not to fix the attention exclusively on the infarct in the peripheral vessels but to regard this as nothing but a link in a chain of emboli in other organs that may have occurred before or after the embolism in the periphery.

The extensive study in thrombosis made by Bull shows us the necessity for bearing in mind that the most fertile field for thrombosis is in the heart. This is further confirmed by Bannowitch and Ira<sup>2</sup> who find that emboli and thrombosis of abdominal aorta are usually cardiac in origin.

There are two types of emboli originating in the heart. First, small mycotic vegetations associated with endocarditis; second, a large type that develop where circulation is retarded or stagnant, as in auricular appendages, apices of the ventricles, and between the columnæ carni. On rare occasions a peculiar ball thrombus is found, always in the left auricle and associated with mitral stenosis.

## ETIOLOGY

The cause of thrombus formation is not clearly determined but various conditions and combinations of circumstances are mentioned. First, it is believed that blood platelets are the nucleus of a thrombus, the theory being advanced that some injury to the endothelial surface of the heart or vessel causes an accumulation of platelets and, with this, thrombus-forming change takes place in the blood and we have the begin-

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ning of what may be a death-dealing formation. The question is not entirely settled as to whether this injury to endothelial surfaces may be due to physical means or to the effect of bacteria or their products in the blood stream. Stasis in the blood stream is referred to as at least a predisposing factor because thrombi seem to form where for any reason the blood flow is retarded in veins by valves or otherwise, or in the appendages of auricles or apices of ventricles where stagnation is apt to occur. Where thrombi form in the heart, cardiac pathology nearly always exists, such as endocarditis, myocarditis, associated with various stages of decompensation or unusual cardiac activity and frequently auricular fibrillation.

An attempt will be made to bring to you an idea of the types of cases in which thrombosis and resulting emboli are apt to occur, by reporting four cases that impress us as the kind in which thrombosis and infarcts are to be expected.

#### REPORT OF CASES

*Case 1.*—Mr. J. B. P. Age 21. No. 191499. Student.

Family history negative. Previous history negative except for tonsillitis five years ago. Present illness began with rheumatic arthritis with slight fever. Came to institution primarily to have tonsils removed. Temperature ranged from 99.6 to 101.4. Secondary anemia was found. Tonsils large and spongy. Heart enlarged, mitral stenosis with regurgitation. In spite of rest and usual care, irregular fever persisted. Blood culture negative. No leukocytosis. Occasional chills with an increase in fever. *Diagnosis:* Endocarditis lenta.

About ten days after entrance, showers of emboli with resulting petechia developed. These showers became more frequent and in course of time involved conjunctivæ, mucous membranes of mouth, meninges and retina, and finally hemorrhages and thrombosis into the base of the brain and cerebral ventricle causing death. Here the emboli were of the first type and originated from the endocardium, valves being covered with vegetations. The unusual feature of this case was the development of thrombosis and hemorrhages into the right eye that were soon followed by more extensive thrombosis and hemorrhage into the brain.

*Case 2.*—Mr. B. J. N. Age 55. Real Estate. No. 143854.

Family history negative. Previous history negative except for frequent tonsillitis and finally rheumatic fever and myocarditis. Heart very easily embarrassed from minor exertion. Auricular fibrillation developed with the cardiac change. Last illness began with rheumatic arthritis, mild fever and evidences of decompensation. Rest and small doses of digitalis resulted in considerable improvement as far as decompensation was concerned. Temperature soon became normal. Cardiac pain was much less. Patient was permitted to be up and about the room. At times heart action was tumultuous, and fibrillation persisted. Because of this, digitalis was given rather persistently in moderate doses. Quinidin sul-

phate was not used. One day when up and about his room feeling better than usual, he suddenly felt a prickling sensation in left hip which rapidly extended down the leg, followed by numbness and pain. The numbness finally limited to the area just above the knee down and pain below the knee. Limb was cold, became mottled, result of an embolus in the anterior tibial artery, finally resulting in limited area of gangrene as seen in Figure 1. Amputation was done a few weeks later, and patient lived some weeks after this.



Fig. 1. Infarct into left anterior tibial artery with resulting gangrene.

*Case 3.*—Mr. M. J. T. Age 63. Case No. 189890. Real Estate.

Family history negative except mother died of cardiac disease. Previous history negative. Enjoyed excellent health for more than 33 years without illness. Chief complaint: Rheumatic pain in shoulders and arms and found to have chronic tonsillitis, obesity and hypertension. Habits sedentary. In six years he again presented himself and this time his chief complaint was dyspnea on very slight exertion and precordial pain, radiating into back and arms. Examination reveals blood pressure 150/90, cardiac hypertrophy, muffled heart sounds, second aortic accentuated, no murmurs or irregularities, some pretibial edema. Blood and urine findings negative. Rest and 15 minims of digitalis t.i.d. resulted in improvement of all symptoms, but cardiac efficiency still limited. Patient continued rest program with digitalis almost continuously for about a year at home. Omitted digitalis one or two days every week or ten days. A year later patient presents himself and reports condition fair for six or eight months after previous visit. The last few months dyspnea has been much worse in spite of a great deal of rest and digitalis. Auricular fibrillation had developed and persisted under digitalis, even with pulse rate in the neighborhood of 60. Decompensation had increased. Blood pressure 145/90. Cardiogram revealed inverted T wave and auricular fibrillation. The inverted T wave may be due to the prolonged use of digitalis. Patient was again put to bed, rest induced at night by 1/12 grain of heroin for a few nights, then veronal was given. Pulse ranged from 50 to 66. On the sixth day, experienced sudden numbness of toes of right foot, soon followed by pain in leg below knee with marked pallor and lower temperature in this part of the leg. An attempt was made to relieve the patient by arterial sympathectomy, hoping to avoid amputation, but thrombosis of the tibial artery was discovered. Patient did not survive the effects of the anesthesia and surgery, dying a few days later. Autopsy did not positively reveal the location of the thrombosis, but in view of the fibroid heart and fatty degeneration and coronary sclerosis, we are inclined to believe that it is cardiac in origin.

*Case 4.*—Mr. E. S. G. Age 53. Banker. No. 205975.

Family history: Father died of chronic Bright's disease and diabetes, otherwise negative. Habits sedentary. Previous history: No serious infection except pneumonia at 30 years of age. Obese for years prior to present illness owing largely to over-indulgence in food and lack of exercise. Chief com-

plaint: Shortness of breath, abdominal distension, constipation. Examination: Obesity, most marked over the abdomen. Expression is anxious, marked dyspnea on reclining, slight cyanosis, chest emphysematous with limited expansion. Percussion gives good resonance, auscultation reveals breath sounds harsh, congestion at the base of both lungs. Râles heard occasionally. Apex not visible but barely palpable in the mid-clavicular line. Cardiac dullness fully 10 cm. to the left and 3 cm. beyond the right

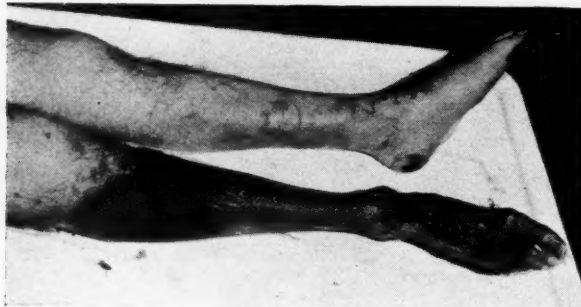


Fig. 2. Extensive gangrene, result of occlusion of lower portion of femoral artery. Some infarcts of the other leg.

sternal border. Heart sounds muffled, no murmurs, second pulmonic greater than second aortic. Blood pressure 105/85, pulse rate 110. Some edema of the lower extremities. Abdomen distended. Liver dullness increased, 5th intercostal space to two inches below the costal margin, and tender to palpation. Urine showed traces of albumin, no casts. Blood count normal. Wassermann test negative. Moderately increased non-protein nitrogen (40.5), uric acid 6.4, blood sugar 120. X-ray of the chest revealed enlargement of the heart 35%, basal congestion of the lungs. Rest in bed or in a comfortable chair, digitalis in rather vigorous doses in the beginning, codein during the day and heroin at night failed to lower the pulse rate or lessen the dyspnea. Salines given for abdominal distention. Liver increased in size and tender at the end of three weeks. Heart action still tumultuous and decompensation still evident. While resting quietly in a chair after lunch he developed a severe pain in the right leg and on examination was found to be cold and cyanotic with numbness of the leg. Morphine had to be used freely for pain and gradually demarcation of infarct developed and finally gangrene of the right leg as shown in Figure 2. The first infarct was followed by smaller ones in the upper branches of the femoral, and some in smaller vessels of the left foot, the most marked infarct being about the heel. The heart remained tumultuous with pulse 120 or more. Pulmonary congestion gradually increased and prostration rather extreme. With morphine and absolute rest and small doses of digitalis, the patient lived 27 days after the infarction occurred.

#### DISCUSSION OF CASES

These cases have been reported somewhat in detail as far as circulatory findings are concerned in order to give an idea of the type of case and symptoms and behavior of the heart leading up to thrombosis and embolic infarction.

In Case 1, autopsy revealed the origin of emboli in the heart. In Case 3, the location of the thrombus could not be absolutely determined, but the suspicion was that it was

located in the left ventricle. Cases of bacterial endocarditis practically always produce showers of emboli that originate from vegetations and clumps of bacteria from valves and adjacent endocardium and are of great diagnostic importance. Once in a while murmurs are absent in this form of endocarditis and in such cases it has been found that the endocarditis is located at the bases of the valves, not extending to edges of the cusp. Either mitral or aortic valves are the most frequently involved and often both. The other cases depict the chronic myocardial degenerations, resulting in gradual failure of cardiac efficiency with increased decompensation. Thrombosis develops from the blood stasis in certain parts of the cardiac cavities and perhaps also because of degeneration of endocardium due to extension from the myocardial disease.

#### MANAGEMENT

In the way of prophylaxis, it is well to bear in mind that there are certain types of cases that are apt to develop thrombosis in the heart or beginning aorta with consequences as already outlined. If by intuition, experience or otherwise, we can anticipate such possibilities, then we should be very insistent on absolute rest as the main therapeutic hope, so that a thrombus may undergo as complete organization as possible. In cases in which the heart remains tumultuous, with evidence of decompensation, the patient should be urged to rest in bed until these symptoms subside. The rest in bed for a considerable period will favor a complete organization of the thrombus. Even with some decompensation, large doses of digitalis should be avoided, because with vigorous cardiac contractions, emboli are apt to be broken off. Moderate digitalis therapy is in order and may add to the patient's comfort. This applies especially to cases of auricular fibrillation. We are often tempted to give quinidin to the patient with fibrillation, but with a history of decompensation and the associated degeneration of the myocardium, the use of quinidin appears rather futile and dangerous. In cases of rheumatic heart with mitral stenosis, and limited cardiac efficiency, quinidin should be used with great caution. If a thrombus is located in the cardiac cavities and particularly in the auricles, then with the establishment of normal rhythms the contraction of

the myocardium becomes more complete and emboli are more apt to be distributed.

In the case of infarction, the treatment must be symptomatic and vary according to the location of the organ involved. Shock must be cared for in the usual manner and cardiac stimulation instituted according to conditions. Heat must be used to maintain temperature of the tissues, in hope of collateral circulation being established, thus limiting the extent of gangrene. For the gangrene, the best procedure in my experience is to keep the area covered with gauze or cotton saturated with alcohol. This prevents infection and softening of tissue and results in a very dry form of gangrene. It also eliminates absorption of any product of putrefaction better than any other means, and unpleasant odors from the dead tissue.

In case the location of the embolus can be determined within a few hours of the infarction, embolectomy should be considered. When done early it may prevent gangrene. If the gangrene in the extremity is at all extensive, amputation becomes necessary.

#### SUMMARY

1. The greater percentage of infarcts are of cardiac origin, thrombosis occurring in the heart in the following order of fre-

quency: (1) right auricle; (2) left ventricle; (3) left auricle; (4) right ventricle. Thrombosis in either side of the heart may produce infarcts in both pulmonary and peripheral circulation when a patent foramen ovale exists, but these cases are rare.

2. The three types of emboli originating in the heart are (1) small mycotic vegetations associated with endocarditis; (2) a large type of emboli that develop where circulation is retarded or stagnant, as in auricular appendages, apices of ventricles, and between columnæ carni; (3) ball thrombus, which is rare and always in left auricle and associated with mitral stenosis.

3. Blood platelets are believed to be the nucleus of a thrombus, an accumulation of these being caused by injury (bacterial or otherwise) to endothelial surfaces. Stasis in blood stream is a predisposing factor, and cardiac pathology nearly always precedes the formation of thrombi.

4. Types of cases in which thrombosis and emboli are liable to occur are discussed, and management of cases outlined.

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### OBSERVATIONS ON THE MALIGNANT MELANOMA\*

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A critical review of 27 cases of melanotic growth of the skin has been undertaken in this paper because of the present inadequate methods used in the treatment of many cases and in an endeavor to outline a surgical plan for better results.

The term melanoma, which specifies the character of the tumor cell containing a variable amount of an iron-free pigment, melanin, will be used in an endeavor to show no partiality as to the connective tissue, epithelial or endothelial origin of these growths.

The malignant melanoma has its origin as a rule from the nevus cells of pigmented warts and moles. The benign melanoma or pigmented nevus consists essentially of a localized area of pigmented basal cells, with the presence of so-called "nevus" cells arranged in groups or columns in the upper corium.

The malignant tumors have so varied a histological structure that melano-sarcoma, carcinoma, endothelioma and perithelioma are described and in many instances marked variation of cell type may be found in the same tumor.

The pigment, melanin, is produced by the specific mesoblast cell, the chromatophore, a star-like, dendritic cell. There is more or less general agreement that it is a product of a special metabolic function of the cell, secretory or otherwise, by which the protein material brought to the cell is converted into pigment by means of an enzyme. It has been suggested by many writers that the presence in the skin of an abnormal amount of pigment makes the epidermal or mesodermal cells unstable; so that when the

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pigment further increases malignancy starts.

It may be said that the majority of malignant melanoma have their origin in pre-existing simple or benign moles. In the series of cases being described, twenty-one of the twenty-seven cases had their origin in the blue-black mole or nevus.

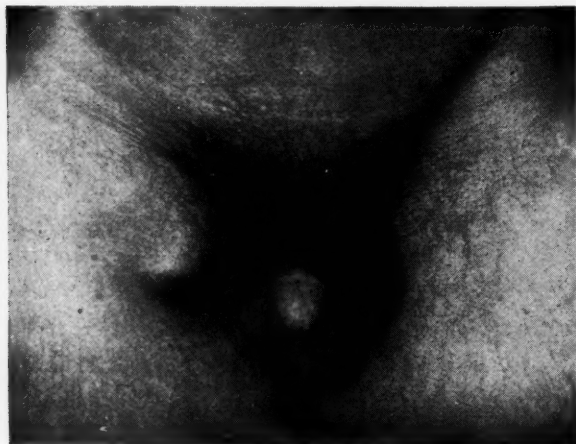


Fig. 1. Region metastasis

That the lymph glands may be the primary site of the disease without skin lesion seems to be borne out in a limited number of cases in the literature.

Eve records two cases of malignant melanoma arising in the scars of puncture wounds which Handley explains as being due to the traumatic implantation into the subcutaneous tissues of a group of dermal-connective tissue cells; of actual or potential chromatophores.

A case in this series illustrating the origin of melanoblastoma in a puncture wound (Fig. 1):

Mr. J. B., age 42 years, paperhanger. For 20 years the patient had carried long scissors at his side in the paperhanging business and had frequently pricked the calf of his right leg with their points. 1 year ago he noticed a small black speck at this site on the calf of the leg. This increased in size and attained the proportions of half an orange, bleeding easily on slight trauma. Examination revealed an orange-sized tumescence over the right calf with color varying from purple to blue-black and with the surface partly eroded. The right inguinal glands were enlarged and palpable. Excision of the primary with resection of the inguinal glands was done and the pathological diagnosis was that of melanoblastoma with metastasis to the inguinal glands.

On histological examination of the malignant melanoma Borst describes three varieties of structure: (a) those consisting of slender spindle cells, the ends of which are continued into very long branching processes; stellate, round and oval cells are often also present; (b) those consisting of spindle-shaped cells arranged in intercross-

ing bundles. In cross section these growths present an alveolar appearance. (c) Those consisting of large cells, round, oval or polygonal in shape, arranged in alveoli separated by strands of connective tissue. The distribution of pigment may be very irregular. The whole growth may be a deep coal-black, it may be only partially pigmented or entirely colorless. This irregularity in pigment distribution has been especially noted in the metastases. The primary skin lesion may show an abundance of deep pigment while the nearest lymph glands draining the area may be without pigment.

That moles, birthmarks and warts of congenital origin may remain benign and unnoticed for years only to undergo malignant change later, presupposes an exciting factor. Undoubtedly this factor in the majority of cases arises as a chronic irritation. Eleven of the cases of this series give a definite history of irritation. Yanagiva and Tchikawa succeeded in producing cancer on the ears of rabbits by protracted painting with tar. Russell (1923) stated that the experimental production of cancer can now be carried out with a considerable measure of success by two methods: The one by the irritation of chemical compounds as yet not isolated, of tar, and the other where cancer is induced by the irritation set up by the presence and products of gross parasites such as the artificial infection of the rat's stomach with a nematode; in both cases the principle is essentially the same, the induction of chronic irritation.

Some writers regard the melanin pigment in the light of a chemical irritant which may first produce an abnormal epidermal cell proliferation and Borst and others hold that it is set free in the tissue spaces and sets up a malignant proliferation in the endothelial and connective tissue cells.

Irritation in the form of mechanical trauma from clothing, scratching, friction and chemical applications may act as the exciting factor in producing the change from benign to malignant growth. That the presence of a congenital nevus or birthmark is not essential is evidenced by the reported cases of the development of malignant melanoma in puncture wounds, e.g., from a thorn in the foot, especially in the races of the upper Nile.

In the study of this series of cases one is strongly impressed with the rapidity of malignant change, recurrence and rapid re-

gional and general metastasis incident to treatment, previous to observation; such as biopsy, cauterization with the electric needle, actual cautery, chemicals and inadequate excision.

The following cases illustrate the effects of treatment of the melanoma by electrocoagulation (Fig. 2):



Fig. 2. Local recurrence at site of previous operation.

Mrs. A. W., age 41 years, housewife. A birthmark had been present in the lower left flank of a brownish black color which was constantly irritated by the clothing. Increased to the size of a hen's egg and removed 13 months before entrance with the electric needle. Shortly following this removal a lobulated black mass appeared at the site and enlarged to the size of her fist. Nine months previous to admission this mass was excised and 2 months later similar small black tumors presented themselves along the entire line of the incision. Patient received two X-ray treatments and 2 months before admission a small bluish tumor was noted in the left breast, with several in the left groin. Examination revealed a group of lobulated nodules ranging in size from pinhead to hen's egg, bluish, red and black in color, exuding a slight purro-hemorrhagic discharge, soft to hard in consistency along a healed 10 inch incision in the left flank and extending on to the abdomen, toward the umbilicus. The lymphatics of the left inguinal region were of olive size and firm to palpation. In the lower quadrant of the left breast was a walnut-sized, firm mass with bluish translucence through the skin.

Mr. J. A., age 62 years, farmer. In June, 1928, small lump noted just above the outer epicondyle of the right humerus at the site of a pigmented spot which had been present for years. Patient scratched this nodule so that it increased in size and bled. It was removed with the electric needle, shortly following which two small black spots were noted at the site. The tumor mass recurred and was excised in February, 1929. He was given several X-ray treatments over this area as well as the axilla and 2 months before admission noted a swelling over the medial upper arm and a second swelling in the right axilla. The epitrochlear and axillary glands resected on 8-20-29 with a pathological diagnosis of melanotic sarcoma.

Mr. G. W., age 51 years, postal carrier. Several years ago noted a small brown papule on the chest just to the right of the sternum which recently had grown very rapidly in size and turned black in color. April, 1928, it was removed with the electric needle and 2 months later a mass appeared in the right axilla. The axillary glands were resected with a pathological diagnosis of melanotic sarcoma.

Mr. B. C., age 57 years, hotel proprietor. Tumor mass on the pinna of the left ear present since 1925. Removed twice in 1927 with the electric needle with a recurrence each time. Examination revealed a black tumor mass  $2 \times 1 \times 1\frac{1}{2}$  cm. on the posterior pinna of the left ear. Excision with the endotherm knife with a pathological diagnosis of advanced melanotic sarcoma.

When a congenital pigmented wart or mole which for years has shown no change



Fig. 3. Malignancy arising at site of mole

begins to enlarge, bleed, discharge and ulcerate it should be treated as a malignancy. To wait for regional glandular involvement in an endeavor to settle the diagnosis is to court disaster (Fig. 3).

Mrs. G. K., age 36 years, housewife, malignant melanoma of the neck. August, 1927, a small black mole present since birth was removed from the back of the neck by means of the electric needle. Eight months later swelling occurred in the scar and in June, 1928, was as large as a marble. Three X-ray treatments were given and the growth excised, as well as another mass on the left side of the neck, which had recently appeared. Four weeks before admission there was onset of shooting pain in the left leg with nausea, vomiting, and pain in the abdomen, back and shoulders. There was some hemoatemesis; stools had also been tarry. Physical examination revealed a pale female, well nourished, with tenderness over the right breast, right upper quadrant and left inguinal region, with a questionable mass in the right upper quadrant. There were nodular masses beneath the scars of excision in the neck. X-ray examination of the chest showed an adventitious shadow in the left hilum suggestive of a metastatic condition. Pelvic X-ray showed some mottling of the left ischial and pubic rami suggestive of metastasis.

Autopsy findings and pathological diagnosis: Recurrent melanoblastoma in the skin of the neck; generalized melanoblastomatosis, chiefly amelanotic, in the meninges of the brain, spinal cord, skull cap, vertebra, ribs, skeletal muscles, thyroid, heart, lungs, spleen, pancreas, liver, kidneys, adrenals, ovaries, uterus, all lymph glands. Acute exacerbation of chronic passive congestion, atrophy and parenchymatous degeneration of all organs.

In order that the treatment of these very malignant growths may be better understood it is imperative that there should be a clear knowledge of their mode of metastasis. The lymphatics of the skin are collected from very fine capillaries in the epidermis

in lymphatic trunks, lying both in the sub-epidermal tissues and into larger trunks in the fascial planes, which eventually terminate in regional lymph nodes. It has been shown by Campbell de Morgan and later by Handley that the growth of melanoblastoma occurs first along the lymphatics. This per-

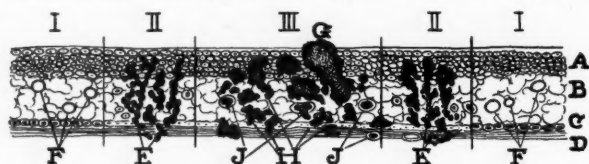


Fig. 4. A. Epidermis with primary melanoma G; B. Corium with blood vessels F and superficial lymphatics E; C. Fascial lymphatic trunk; D. Muscle.

I. Zone furthest from primary with melanotic cells entirely within fascial plexus C.

II. Zone—Fewer melanotic cells within fascial plexus; perilymphatic leukocytosis I and fibrosis of lymphatics; permeation of superficial lymphatics E toward epidermis in corium and in muscle.

III. Zone nearest primary—Complete fibrosis fascial lymphatic plexus; invasion of vessels J with melanotic cells; groups of melanotic nodules H free in corium and muscle.

meation of the lymphatics is largely a mechanical one, the spread of the tumor cells occurring along the line of least resistance. Handley, after extensive investigation, has described three zones surrounding the primary lesion (Fig. 4). Farthest from the lesion in the fascial lymphatic plexus only with no invasion of the surrounding tissues are found the tumor cells entirely within the walls of the lymphatic vessels. Within this zone is an area of inflammatory reaction with peri-lymphatic leukocytosis and fibrosis due to rupture of distended lymphatics of the fascial plexus with melanotic tumor cells as well as a permeation of the sub-epithelial tributary lymphatics toward the skin and invasion of the fascia and muscles. Nearest the primary growth is a zone in which all of the permeated lymphatics have become strangulated by the peri-lymphatic fibrosis incident to the inflammatory reaction set up by the tumor cell's presence and as a result the lymphatics have entirely disappeared, leaving only isolated large nodules of cancer, increasing in size and invading the neighboring vessels, both veins and arteries, by secondary extension. Careful histological examination of the lymph glands draining a primary area presents the identical three zones. That blood vessel dissemination occurs secondarily to lymphatic permeation is thus clearly shown. For a complete understanding of the mode of metastasis, it should be noted that a melanoblastoma may originate near the line of demarcation

in an area drained by two different sets of glands, as the groin and axilla. These cases of necessity require a more radical surgical procedure.

A careful study of the cases of either benign or malignant melanoma treated by means of the electric needle discloses a 100% recurrence at the site of the primary, with early regional and generalized metastasis in the majority of cases. That this form of treatment is not only inadequate for removal of the neoplasm but is also most effective in bringing about rapidly metastasizing malignancy, is now certain. The exact modus operandi by which this form of neoplasm is stimulated to metastasis by this form of treatment is not entirely clear.

A crucial point to be settled in the surgical treatment of the melanoma is to determine at what stage in its progress the malignancy leaves the lymphatics and becomes disseminated in the blood stream. Let it be said that once the neoplastic cells are launched into the blood stream, the prognosis is hopeless. This point of blood dissemination has been variously estimated, but from a review of the cases in this series it has been placed at 11½ months from the time of onset of malignant changes in the primary. The average duration of the disease has been variously stated to be 3 years.

That a rapidly metastasizing melanoblastoma with primary origin unknown may lead the physician or surgeon into pitfalls as to diagnosis and surgical procedure, will be readily seen in the following case history:

Mr. J. R., age 56 years, miner. Onset of illness, September 27, 1926. Felt chilly, feverish, drowsy and nauseated. Awakened the same night with severe pain in the right upper quadrant of the abdomen, radiating to the right shoulder. Hypodermic given for relief. He became weaker and a diagnosis of cholelithiasis was made. Operation revealed a normal, slightly dilated gall bladder. On leaving the hospital, patient began coughing up large amounts of frothy sputum with vomiting and pain in the left chest and a loss of 28 pounds in weight. Six weeks previous to operation patient had noticed a lump in the left axilla which rapidly attained the size of an orange. Roentgenogram of the chest revealed both lungs to be filled with metastatic masses of malignancy. Biopsy of the axillary mass revealed very malignant, rapidly growing, non-pigmented melanoblastoma. Unfortunately, the patient desired to go home and autopsy could not be obtained to determine with assurance the origin of the primary in this case.

The operation for removal of the primary malignant growth is based upon the anatomical disposition of the lymphatics and spread of the neoplastic cells heretofore described. A wide circular or elliptical incision should



be made at least an inch away from the growth in healthy skin. The surrounding skin is then elevated for a distance of about two inches; if necessary, radial incisions from the first can be made to facilitate the procedure. The subcutaneous fat and fascia is then incised at the extreme base of the undercut skin in a circular manner down to the underlying muscle. The entire mass of primary, subcutaneous fat and fascia with a thin portion of the underlying muscle is then removed by sharp dissection. It is necessary during the same operation to remove the regional lymph glands whether palpable or not. It should be advised at this juncture that should the regional glands be palpable at time of operation, removal of the gland-bearing area should be carried out in the same manner as for removal of the primary, inasmuch as Handley has demonstrated the same lymphatic dissemination around the glands.

Far more important in the treatment of this most malignant of diseases is the attack before malignant change has occurred. The benign pigmented mole, the source of trouble in the majority of cases, must be eradicated. Although electrocoagulation or desiccation may often be adequate it leaves behind in a sufficient number of cases, as evidenced by this report, irritated nevus cells which initiate malignancy.

The procedure of choice is the removal of the entire mole by excision with the knife or endotherm. A wide elliptical incision surrounding the mole should be made at least .6-1 cm. away from it in healthy skin. The incision is deepened and a portion of the subcutaneous fat excised in such a fashion that the mole, surrounding healthy skin and subcutaneous fat are removed in toto. The edges of the wound may then be undercut if necessary in order to close it without tension.

#### SUMMARY

1. Most malignant melanomata arise in congenital moles or birthmarks.
2. Chronic irritation is usually responsible for the malignant change.

3. The prognosis for cure after regional metastases have taken place is grave.

4. Treatment of the benign or malignant melanoma by the actual cautery, electrocoagulation, desiccation or chemicals is often inadequate.

5. Blood dissemination follows lymphatic permeation in the metastases of melanoblastoma.

6. The average time for the metastatic cells to enter the blood stream following malignant change in the primary is 11.5 months in this series.

7. Wide excision of the malignant melanoma with 1 inch of healthy skin, wider excision of subcutaneous fat, fascia and superficial muscle and resection of the regional lymph glands is the operation of choice and offers the best prognosis.

8. Complete excision of benign moles through healthy skin and subcutaneous fat as a prophylactic measure against malignant change.

A careful study of the 27 reported cases receiving treatment at the University of Michigan Hospital reveals the following facts:

1. Males—18
2. Females—9
3. Average age—46.9 years.
4. Oldest—75 years.
5. Youngest—25 years.
6. Presence of mole—21 cases
7. Number with primary origin unknown—2
8. Primary in the eye—3
9. Primary in the nasal septum—1
10. Definite history of irritation—11
11. History of previous treatment with electric needle—5
12. History of previous excision—9
13. History of previous X-ray treatment—6
14. Those showing regional metastasis—14
15. Those showing general metastasis—11
16. Average time of regional metastasis—5 1/7 months
17. Average time of general metastasis—11 1/2 months
18. Recurrence at site of removal—9

## BACKACHE AS A GYNECOLOGIC SYMPTOM\*

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That backache is a common complaint of women as a group, is too evident to demand proof. Fairbairn<sup>1</sup> has stated that with the exception of headache, backache is the most common symptom of the tired woman. Furthermore, no one will deny that gynecologic conditions are the direct cause of backache.

These facts need no elaboration, and this paper aims not to prove them, but to emphasize that gynecologic pathology need not cause backache, and also that operative correction of pelvic abnormalities often fails to bring about the desired relief.

So much emphasis has been placed upon diseases of the pelvic organs as etiologic factors of this condition, that there is a marked tendency to diagnose all backaches as gynecologic, especially if a pelvic examination shows any evidence of pathology. This has been brought to our attention so forcibly at the University Hospital, that it is felt that a few words on this subject ought to be of value. Hardly a day passes without seeing a patient who has been sent to the clinic for operation for the relief of backache, because of some pelvic pathology, most commonly retroversion. On examining these patients abnormalities of the pelvis are found, but in many the cure rests, not in pelvic operation, but along totally different lines.

Backache of gynecologic origin is usually sacral in type, less frequently lumbar, and is always central. This anatomic localization does not seem to be generally recognized. Many patients are seen with high dorsal pain as well as one-sided symptoms, who have previously been considered as gynecologic. This anatomic grouping is also an aid in ruling out genito-urinary causes, as they too are usually not central.

Diseases of the spine itself due to trauma, faulty posture, congenital abnormalities, acute and chronic arthritis, and malignant disease (Allison<sup>2</sup>) offer the most difficulty in diagnosis. Time does not permit a thorough discussion of the differential diagnosis of these conditions, but if in doubt a consultation with an orthopedist is certainly indicated, before a pelvic operation is suggested as a cure.

Imperfect posture is an extremely common cause of low central backache in women. Goldthwaite<sup>3</sup> has classified postures into three groups: the normal textbook individ-

ual, the congenital visceroptotic or the carnivorous, and the herbivorous. He further states that individuals of the normal group are seldom found among those who have chronic diseases. In parallel with this is the fact that those of carnivorous or herbivorous stature are those who most often complain of backache.

The carnivorous type may be briefly classified as individuals with narrow epigastric angles, more slender bodies than the normal, the lumbar vertebrae are often of the dorsal type, and six in number. The spine as a whole has a greater range of motion than the normal, due to the relatively short transverse processes with their flat articular surfaces. These individuals usually have a profuse distribution of hair, and have heads of the dolichocephalic type, with narrow faces and prominent ears. Their abdominal organs have weaker attachments than usual and tend to be found considerably lower than is usually considered to be anatomically correct. The scapulae are apt to be prominent. There is a greater lumbar curve and a forward inclination of the pelvis. With this congenital handicap, it is not strange that this group readily develop poor habits of posture, and the already present abnormalities become exaggerated. With a general lowering of the abdominal viscera the pelvic organs likewise share in the malposition, the normal deflecting planes of intra-abdominal pressure are changed and the joints of the lower back are put under unusual strain. This will be true whether the pelvic floor is relaxed or not. The visceroptotic type most commonly have lumbar backache.

The other congenital group is the herbivorous one. These individuals are usually of heavy bony structure, with excessive adipose deposits. Their epigastric angles are

\*From the Department of Obstetrics and Gynecology, University of Michigan. Read before the 109th annual meeting of the Michigan State Medical Society, Jackson, Sept. 17 to 19, 1929.

wide, their heads are round, their hair scant. They are solid in contrast to the flabby condition of their carnivorous brethren. All joints are heavier, the lumbar spine is extremely broad, the anteroposterior diameter of these vertebrae is much less than the transverse. The transverse process of the last lumbar vertebra often articulates with the upper portion of the sacrum, resulting in a diminution of lateral motion. The lumbar spine has a smaller anterior curvature than the normal, the pelvic inclination is less. It is this type that most often have severe symptoms from pelvic relaxations, undoubtedly due to the heavier duty to which the pelvic floor is subjected. These people, if they have backache, usually have the sacral type, and almost uniformly have congenital retroversion.

Sturmdorff<sup>4</sup> states, using as an index the depth of the lumbar curve as measured from its lowest point perpendicularly, to a ruler placed in close apposition to the most prominent portion of the sacral and dorsal spine, that from an index "from 25 millimeters down, the existence of congenital retroversion, may be positively predicted in nearly every case prior to its bimanual verification."

Ward<sup>5</sup> has stated "that in backaches due to gynecological disease, pelvic congestion, however produced, is a predominating factor," and Miller<sup>6</sup> at about the same time pointed out that pelvic congestion itself is often the result of faulty posture associated with poor muscular tone. Therefore, we are not arguing with the exponents of congestion as an important causative factor for backache; rather we agree in believing that faulty posture has caused or helped to cause this congestion.

If posture plays such an important rôle in causing backache, why not attempt to treat it intelligently with suitable exercises and supports, even in the presence of abnormalities of the pelvis?

It is not unusual to see cessation of backache following an operation for repair of pelvic pathology, which was evidently not of etiologic importance. The explanation lies, not in the fact that the pelvis was responsible, but in the fact that fatigue is a common cause of backache, and that this fatigue had been decreased by the rest necessitated by the operation. Fatigue likewise is much more likely to reach pathologic proportions

in the individual with poor muscular tone and posture.

There is another common finding in women, so common that it is easily neglected, namely constipation. This has been so thoroughly dragged into every discussion that I hesitate to mention it. However, from a mechanical standpoint we cannot overlook it entirely; for in addition to backache it can cause pelvic abnormalities such as retrodisplacements or even accentuations of rectoceles. Shall we repair this pathologic condition with the hope of relieving the symptom under discussion? Many such attempts have been made with universal failure. To further illustrate the failure in considering all cases as gynecologic, the following case reports are given.

Mrs. J. R., age 28, mother of one child, entered the hospital because of backache, which has been present for many years. One year before, she had been operated for retroversion without relief of symptoms. She feels that the operation has been poorly executed and blames this for a continuance of her symptoms. Examination reveals that the operative result is excellent, that the uterus is in its normal position, and that the pelvis is negative. Postural examination revealed a typical carnivorous stature, with a lumbar index of forty millimeters. This condition had been present at the time of her operation, but had been overlooked. Relief for this patient was along postural lines entirely.

A second case, which illustrates another common type, was that of a young unmarried woman, Miss D., 25 years of age. She entered the hospital with a letter from her doctor, saying that her complaint was pain in the sacral region, and requesting a tonsillectomy and correction of a retroversion. Examination revealed septic tonsils which were removed; a small infantile retroverted uterus; and a lumbar index of twenty-seven millimeters. X-rays of the spine showed a sacralization of the last lumbar vertebra, with an articulation between the transverse process on the left and the sacrum. Here too, postural therapy and not pelvic operation offered relief.

What then can be our safest method of approach? What method will give the greatest number of cures, without unnecessary operations? These are our problems, and their solution is not entirely simple. Three examinations are necessary: a general physical, a pelvic and a postural. If the pelvis proves to be negative our problems are simplified, as operative correction is not apt to be considered except for definite orthopedic pathology, and cases of that type seldom fall into this indefinite group. If the general physical examination yields findings that might cause fatigue, they should be treated. If the posture is poor, exercises and supports should be advised. If in addition to general and postural findings, gynecologic pathology is present, do



not attempt its correction until the other lines have been thoroughly tried, or at any rate do not correct it, and neglect its associates. Naturally many gynecologic conditions that might cause backache demand operations, for entirely different symptoms, and these of course should not be postponed, but carried out in conjunction with other indicated methods.

Unfortunately a uterine retrodisplacement, is one of the few pelvic conditions that can be temporarily corrected by means of mechanical support. This aid to diagnosis, in fact to a prognosis of an operative outcome, is not resorted to as commonly as would seem indicated. Certainly if a well-fitting pessary holding the uterus in a position of ante flexion does not relieve backache, an operation, no matter how skillfully performed, cannot be expected to bring about a cure.

If pelvic relaxations cause backache by traction on the uterosacral ligaments, why is backache so uncommon in cases of complete prolapse? Graves<sup>7</sup> has written that "the more complete the prolapse the less the pain." Individuals with this pathology routinely complain not of sacral pain, but of lower abdominal discomfort. It is hard to explain backache, then, on a basis of ligamental strain. If, however, pelvic relaxations are present in a patient with a faulty posture, backache may well be a concomitant symptom, but its relief should not be expected from plastic operation upon the genitalia; although, as mentioned before, a temporary relief may well be expected as a result of relieving fatigue.

Obstetric conditions have not been considered, and time does not permit a thorough discussion of this subject. LaVake,<sup>8</sup> however, expresses the opinion of the majority when he says, "In the postpartum patient abnormal conditions here [in the back] are more frequent causes of backache than are gynecologic conditions." He specifies conditions, "in the sacroiliac or lumbosacral joints, in the muscles of the back, in unequal length of legs, or flat feet." The low back pain or coccydynia, so commonly seen following confinement, has its primary cause in delivery, but its correction is an orthopedic problem.

There is no doubt that many, and perhaps the majority, of backaches are gynecologic; nevertheless the percentage of operative fail-

ures is certainly too high. Bullard<sup>9</sup> in 1921 gave the following information: "In a series of 721 cases of [gynecological] backache 85 per cent were cured by operation, 15 per cent were unrelieved. Probably more than 15 per cent of female backaches are not gynecological. Finally that 15 or 20 per cent all cases of retroversion, prolapse, pelvic inflammatory disease, lacerations, or pelvic tumors do not have backache." This information seems especially pertinent. If 15 per cent of cases supposedly gynecologic prove not to be, then the percentage of all backaches in women that are not gynecologic must be much more than this. There has been some advance in the past eight years, but nevertheless the figure of 15 per cent of failures probably has not been appreciably reduced throughout the country as a whole. In view of this possible failure, one cannot emphasize too strongly the need for exhaustive study before seeking aid along operative lines.

These ideas are not presented as original, but represent a gradual development in this clinic under the guidance of Dr. Reuben Peterson. In a recent article he<sup>10</sup> has reviewed all of the cases of retroversion that were seen in the University Hospital from 1901 to 1928. 7,378 such cases were examined or 23.3 per cent of the total gynecologic cases seen. Of this number 1,392 or 18.8 per cent were operated for a correction of this condition. He points out, however, that this percentage is decreasing under the present routine as shown by the fact that from 1925 to 1928 only 11 per cent of patients with retroversion were operated in contrast to 21 per cent from 1901 to 1925. This decrease is explainable on the grounds that more attention is being paid to faulty posture and to orthopedic conditions in the back, than formerly, and that every patient with the syndrome of backache and retroversion is not at once considered operable.

It can be concluded, from the preceding statements, that too much emphasis has been placed upon pelvic abnormalities as causative factors of backaches. This has resulted in the opinion that pelvic operation is the panacea for all such complaints. This in turn has naturally brought about a large number of failures. Postural conditions, on the other hand, because of the fact that their significance is often misunderstood, and that their treatment demands constant control

and management, have been neglected or overlooked. A reversal of this condition is necessary if our results are to improve.

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## RHEUMATIC CARDIAC DISEASE WITH SPECIAL REFERENCE TO THE NEWER CONCEPTS OF RHEUMATIC FEVER\*

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Studies conducted during recent years have shown rheumatic fever to be unusually extensive in its involvement, paralleling syphilis and surpassing tuberculosis. In addition to the well known participation of the joints and heart in the disease, there occurs involvement of the large and small arteries, nervous system, lungs, pleura, kidneys, skin and diaphragm. The names that have been applied to the disease, acute articular rheumatism, acute rheumatic fever, and so forth, unquestionably have been potent factors in retarding accumulation of knowledge.

## ETIOLOGY

Various theories and hypotheses concerning the etiology of rheumatic fever have been advanced, but positive proof of a specific cause has not yet been presented. Little doubt remains that the disease is infectious, and in numerous instances strong evidence for its communicability has been presented.<sup>24</sup>

Serous polyarthritis has been produced experimentally in various ways, by the use of bacilli of dysentery, *Mycobacterium tuberculosis*, *Alcaligenes militensis*, and *Treponema pallidum*; yet the disease thus induced differed materially from true rheumatic fever. Nonhemolytic streptococci frequently have been recovered from the blood, joints, cardiac valves and pericardial fluid in rheumatic fever, and numerous investigators, particularly Poynton and Payne, Rose now,<sup>21,22,23</sup> Coombs and Clawson, associate this organism with the etiology of the disease.

Inoculation of animals with streptococci isolated from patients with rheumatic fever has resulted in myocardial lesions that are similar to, but not identical with, Aschoff's nodules. On the identity of these experimental lesions rests, to a considerable extent, the controversy attending the hypothesis that streptococci are the cause of the dis-

ease. Subacute bacterial endocarditis has now been positively identified with the invasion of nonhemolytic green-producing streptococci, and the occurrence of this disease in such an unusually high percentage of patients previously afflicted with rheumatic fever has offered an alluring causal association. An immediate objection to this idea presents itself in the great differences in the reaction of the tissues to the two diseases. The lesions of subacute bacterial endocarditis are almost without exception embolic; the lesions of rheumatic fever unmistakably are of two types, exudative and proliferative, whereas embolic phenomena are rare except as they occur with subsequent cardiac failure. The pathogenesis of rheumatic fever will be considered more fully in later paragraphs.

These differences between rheumatic fever and subacute bacterial endocarditis have been explained theoretically as being due to differences in the number and the virulence of the organisms. Convincing proof of this allegation, however, is still lacking. Swift,<sup>31</sup> in a recent publication, discussed three aspects of the etiology of rheumatic fever: (1) elective localization of streptococci, (2) elaboration by specific organisms, of specific toxins, and (3) rheumatic fever as an allergic phenomenon. He met the ar-

\*From the Section on Cardiology, The Mayo Clinic, Rochester, Minn. Read before the Michigan State Medical Society, Jackson, Michigan, September 18, 1929.

gument for elective localization with the objection that the disease is not limited but is as widespread as syphilis. The hypothesis of specificity of streptococci, as advanced by Small,<sup>25,26,27</sup> is dependent on recovery of indifferent streptococci in blood culture from some patients with rheumatic fever, on modification of the course of the disease by an immune serum prepared against these organisms, and on the effect of a vaccine prepared from them. Swift<sup>31</sup> objected to these claims with the statement that they do not take into consideration the possible part played by other types of streptococci which have been recovered from blood cultures or tissues of patients, and that they do not consider the influence of other types of anti-streptococcus serums or vaccines.

The studies of Hitchcock and of Nye and Seegal have shown that indifferent streptococci are found as frequently in the throats of nonrheumatic as in those of rheumatic subjects and that the strains recovered from blood cultures belong to different immunologic groups. Swift and Kinsella, and Zinsser and Yu, have shown a multiplicity of cultural and immunologic types of streptococci, and Menzer, Cole, and Bull have demonstrated that strains recovered from patients with rheumatic fever produce the same lesions as do those strains obtained from the throats of nonrheumatic persons when injected in large numbers into experimental animals.

In recent years, investigators have been considering allergy as at least a factor in the etiologic problems of rheumatic fever. Swift<sup>31</sup> looks on the allergic hypothesis as a reasonable explanation which may account for the disagreement regarding the infecting organism. The investigations of Swift and his coworkers<sup>1,7,8</sup> regarding allergy are of interest, and merit careful consideration. They found that in rabbits the production of focal lesions by certain nonhemolytic streptococci resulted in a hypersensitive state similar to that which occurs in tuberculosis. They expressed the belief that this hypersensitive, or allergic, state is dependent on the production of focal lesions and that when the state is once present it can be continued by injection of streptococci that practically do not provoke a reaction in normal animals. An animal that has been highly sensitized responds to intracutaneous injection of very small doses of streptococci, with marked edema, exudation, and prolifera-

tion; to corneal injection, with interstitial keratitis, and to sufficiently large doses administered intravenously, with death.

In animals that were first inoculated intravenously, none showed the reactions of hypersensitiveness, and the resulting lesions were considerably smaller than those which occurred in normal animals following intracutaneous inoculation.<sup>32,33</sup> In the majority of their animals, Swift and his coworkers could maintain the hypersensitive state by intracutaneous inoculations continued for months; however, intravenous inoculation in appropriate dosage abolished the reaction so that the animal was in the nonsensitive, or immune, state. The prolongation of the hypersensitive state by focal lesions appeared to be distinctive of the nonhemolytic streptococci, for repeated intracutaneous inoculations of hemolytic streptococci brought on decreasingly intense reactions. There was no apparent specificity of nonhemolytic streptococci in hypersensitive animals.

These observations which demonstrate an allergic and an immune type of reaction toward the same nonhemolytic streptococcus, are of significance, and Swift<sup>31</sup> applied these phenomena to the well known differences existing between rheumatic fever and subacute bacterial endocarditis. In rheumatic fever focal infection is generally conceded to exist, and there is a marked tissue reaction to certain irritants, which, if they are streptococci, are present in only small amounts in any one region.

As has been stated, the tissues in subacute bacterial endocarditis fail to respond over-actively to the infective organism. The lesions in this disease are embolic and the tissues involved do not react by exudation or by proliferation to the extent observed in rheumatic fever. Swift<sup>31</sup> did not interpret the data in subacute bacterial endocarditis as indicative of failure of the tissues to react to the infection but rather to a reaction characterized by diffuse hyperplasia of the hematopoietic system, and to the embolic lesions.

In defense of the allergic theory of rheumatic fever, he stated that although the part played by streptococci in causation is not irrevocably established it offers the best available explanation of how different strains of the organism could produce analogous clinical and histopathologic effects.

Rheumatic carditis frequently has been observed following chorea, and this estab-



lished chorea as being closely related to rheumatic fever.

#### CLINICAL FEATURES

The typical features of rheumatic fever, such as increasing fever, toxemia, sweats, migratory involvement of large joints, and leukocytosis, are so well known that further emphasis on them would be irrelevant. At the end of three or four weeks, in many cases, the patient is apparently well and is able to return to work. The disease often appears to be self-limited. In many cases, the convalescence is not uneventful and after a brief and variable period of normal temperature and absence of leukocytosis, these signs reappear, and the pulse rate increases, and often is disproportionate to the fever. A systolic murmur may be audible over the cardiac area and there may or may not be disturbances in the rhythm of the heart. These phenomena must at once direct attention to cardiac involvement. It is well to carry suspicion even further, because of the appallingly high incidence of carditis in rheumatic fever, and to consider the heart as participating in the disease until positive proof to the contrary is available.

It is not unusual, in practice, to observe patients with well marked mitral stenosis who deny having ever been afflicted with rheumatic fever or chorea. Since these lesions are so notoriously the result of rheumatic fever, the question is at once brought to mind whether or not these patients have suffered from rheumatic fever in one of its more unusual forms. Frequently the patient dates his illness from an acute infection which is said to have been influenza; yet it is known that bona fide cases of influenza have been exceedingly rare since the severe pandemics. Furthermore, it is known that cardiac injury, at least of the type simulating rheumatic carditis, did not occur with influenza. These observations may indicate that these current, unidentified, infectious illnesses are in reality nonarticular forms of rheumatic fever. In a recent publication, Sutton showed that among 427 boys and girls with rheumatic cardiac disease, 18 per cent did not give a history of chorea, acute arthritis or growing pains.

The primary attack of rheumatic fever may be followed immediately by a second attack, in all respects similar to the first, with recurrent, migratory articular involvement and with evident visceral participation.

In the cases of lesser recurrences, particularly, the therapeutic measures, employed may modify the clinical picture sufficiently to mislead medical judgment. Control of symptoms and signs by treatment may erroneously be interpreted as being the result of spontaneous abatement of the disease, and premature activity on the patient's part may result disastrously.

Before the cardiac phases of rheumatic fever are considered it may be well to mention other visceral and associated involvement in the disease.

Fibrinous pleuritis not infrequently occurs in rheumatic fever, especially as a complication of rheumatic carditis. It occurs most commonly on the left side, probably because of the proximity of the pleura to the pericardium, although cases of bilateral pleuritis have been reported. The inflammatory process may be fibrinous or serous, and if effusion occurs it is in moderate amount only and aspiration rarely is required. The acute process subsides by the organization of the fibrinous exudate and resulting obliteration of adhesions between the visceral and parietal layers of the pleura.

Rheumatic fever is sometimes accompanied by bronchopneumonia, or by lobar pneumonia, which may occur at any stage of the disease. I have seen bronchopneumonia occur almost coincidentally with recurrence of rheumatic fever. Rabinowitz described what he believed to be a pulmonary lesion characteristic of rheumatic fever. The lungs do not show pneumonic consolidation, but areas of congestion, edema and atelectasis are present. Vascular lesions also exist.

Acute nephritis during the course of rheumatic fever is rare, although instances have been reported. Abnormal constituents of the urine, such as erythrocytes and casts, occurring during the acute infection, strongly suggest actual renal injury, and it is possible that the low incidence of nephritis signifies that virtually complete recovery of the kidney occurs in the majority of cases. Intimal lesions in the arterioles of the kidney, identical with those observed in the pericardium, were observed by Evans in a case of rheumatic fever; others<sup>36</sup> have recorded similar observations.

The participation of the skin in the disease apparently often escapes detection. Small subcutaneous nodules may occur. They vary in size from 0.5 mm. to 0.5 cm..

are firm, usually painless, and are most likely to be situated just under the skin, overlying such prominences as the patellas, elbows, dorsal surfaces of the hands and feet, skull and vertebræ.<sup>15,31</sup> The nodules are evanescent, appear suddenly, remain a few days, and then disappear, although they may persist for several weeks or months.

The identification and description of rheumatic lesions in the blood vessels, especially by Klotz and by Pappenheimer and Von Glahn<sup>18,37</sup> have been valuable contributions to the subject and have, above all, emphasized the widespread distribution of the disease in the body. The lesions demonstrated by these workers were microscopic in nature and consisted of Aschoff's bodies or isolated Aschoff's cells in the adventitia of arteries. They found healed lesions, appearing as flame-shaped scars, in the media, and in later studies they found active lesions in the media of nutrient arteries. The walls of these arteries were thickened from swelling and proliferation of the endothelium and from cellular infiltration. Large collections of lymphocytes, polymorphonuclear leukocytes and Aschoff's cells surrounded the vessels. The arteries that have been found to share in the disease are the aorta, the coronary arteries and their branches, the arteries of the lungs, aortic valve, kidneys, perirenal and perisuprarenal adipose tissue, testes, ovaries, pancreas and intestines. Thrombosis in larger veins is occasionally observed. Aschoff's nodules also have been demonstrated in the diaphragm.

I have commented on the distribution of the disease to emphasize one of the prominent modern concepts regarding it, for without this point of view the disease will continue to be overlooked in its nonarticular forms.

#### PATHOGENESIS

The lesions of rheumatic fever are exudative and proliferative.<sup>30</sup> There is a reaction of the tissues to areas of focal necrosis which in many instances is extremely minute. Following this destruction of tissue, exudation of fluid and of cells occurs; it is exemplified very well in periarticular accumulations. The fluid contains fibrin, many polymorphonuclear neutrophils, and, often, wandering cells. Similar exudates are found in the lesions of the left auricular endocardium, the aorta and smaller arteries.

Frequently marked increase in the fixed tissue cells occurs and forms the basis of

Aschoff's nodules and the subcutaneous nodules; the latter appear to take their origin from the perivascular spaces. This proliferative tissue reaction has been found not only in the heart but also in the lungs, pleura and elsewhere. Exudative lesions are of course not characteristic of rheumatic fever, but the degree of exudation surpasses that of most other diseases.

As has been stated, the heart is involved in a remarkably high percentage of cases of rheumatic fever. The incidence is so great that rheumatic carditis is one of the leading causes of cardiac death. Invariably the endocardium, myocardium and pericardium are involved, but not always in the same proportion. Understanding of the characteristics of the lesion, as has been mentioned, enables the visualization of what occurs in valvular endocarditis. Tissues that, through anatomic arrangement and through physiologic demand, are dynamic and bear stress, have been shown to be favorite sites for the localization of lesions. This is particularly true of the heart and its structurally complex components. The endocardium apparently reacts to the rheumatic process in a manner similar to that of the endothelium of arteries.

In fetal life, the cardiac valves contain vascular structures which apparently, in many cases, disappear with the advent of childhood. The persistence of these vascular structures in childhood and adolescence has been demonstrated by Kugel and Gross, Bayne-Jones, and Kerr and Mettier. It is believed that the persistence of vascular structures increases the likelihood of valvulitis. The subendocardium, below the juncture of the valves with the endocardium and the endothelium of the vessels, is also a region that is involved in the rheumatic process. There are, thus, several possible forms in which valvular injury may occur: (1) by involvement of the investing endocardium; (2) in and about the vessels of the valves, and (3) from lesions in the valvular rings.

The older concepts regarding valvular injury were different from those held at the present time. It was believed that the infection occurred primarily on the surface of the valve and extended by continuity into the deeper structures. Modern studies, however, have clearly disproved this view and have established the process as one of primary valvulitis.

The vegetations of rheumatic endocarditis are small and verrucous, and occur at the line of valvular closure. In the mitral valve the entire line of closure is the seat of verrucae; in the aortic and tricuspid valves, only a portion of the line of closure is involved.<sup>14</sup> The vegetations heal at a very early stage, and in time become firmly organized. The great tendency for rheumatic endocarditis to produce stenosis is not adequately explained by cicatrization of the verrucae, but the occurrence of interstitial valvulitis readily tends an explanation. Shortening of the chordae tendinae by inflammation and by stress also contributes to the stenotic process.

A single attack of rheumatic fever may result in mitral stenosis, but the ultimate valvular deformity may not result entirely from the initial acute infectious process. A low-grade and extremely chronic infection may persist for a considerable time, and lesser recurrent episodes occur that actually cause greater subsequent injury than that which results from the primary infection. This point becomes of great practical importance in the treatment of patients with rheumatic carditis. Pure valvular insufficiency is rare; yet occasionally such defects are disclosed at necropsy.

Many observers have demonstrated typical rheumatic lesions in the endocardium of the left auricle, and occasionally in the right auricle. The lesions extend upward from the root of the posterior leaflet of the mitral valve and resemble patches of endothelial thickening. Sometimes they are covered by a thin layer of fibrous tissue. The lesions are small, rarely exceed 3 cm. in diameter and ultimately become flattened areas of increased density. They contain Aschoff's bodies which occur in rows by virtue of the arrangement of the lamellae of the elastic tissue; the result is a banded appearance.

The myocardium always participates in the disease. The characteristic lesions are Aschoff's bodies, which are rounded, fusiform or spindle-shaped bodies in the interstitial substance, usually in the immediate vicinity of an arteriole. They are usually invisible to the naked eye. They occur in greater numbers in the left ventricle, particularly near the origin of the aorta, in the muscle in the vicinity of the mitral valve, in the apex near the septum, and in the intraventricular septum near the base.

Aschoff's nodules are composed of large

cells, surrounding a necrotic center; the cells are polygonal and contain one or more nuclei. Their presence is irrevocable proof of rheumatic fever, but their absence does not imply the converse, because of the fact that they ultimately disappear. They are believed to exist for several weeks to several months, and ultimately they are replaced by scar tissue.

It is not definitely known at which stage of the rheumatic infection hypertrophy of the myocardium occurs, although Coombs ventured the opinion that it begins while the signs of acute carditis are subsiding. Dilatation and hypertrophy, to some extent at least, are direct results of myocardial involvement; they have been proved to occur in the absence of a valvular defect or of pericardial adhesions. With the addition of mechanical barriers, such as those imposed by stenotic lesions, hypertrophy may become very pronounced.

Some degree of fibrinous pericarditis is almost always an accompaniment of rheumatic carditis. It is usually part and parcel of pancarditis, although instances without endocardial involvement have been observed. The involvement may be patchy but more generally is diffuse. If exudation is profuse, it is churned by the heart's movement into transverse or oblique ridges, which gives the irregular, shaggy appearance of the so-called *cor villosum*. As organization of the exudate occurs, the pericardial cavity becomes obliterated in part or entirely. In more severe infections, the inflammatory process may extend beyond the parietal pericardium and may produce adhesions to the diaphragm, pleura, mediastinum and thoracic wall. This results in one of the most crippling mechanical barriers to which the heart may be subjected. The pericardium is also the seat of Aschoff's nodules.

The apparent predilection of rheumatic fever for the vascular structures at once brings forth the magnitude of this phase of the disease. The extensive involvement of the cardiac structures, in the majority of cases, emphasizes the seriousness of rheumatic carditis, the proof of which is found in the studies on mortality. The nature of the resulting mechanical barriers constantly subjects the heart to increased load, which is an important factor in subsequent cardiac failure. The chronicity of the infectious process, and its tendency to recur, are



likewise provoking influences in promoting cardiac failure.

#### EXPECTANCY OF LIFE

Death resulting from acute rheumatic carditis is not common, as evidenced by the small series of cases reviewed by Thayer and others. However, the eventual toll from cardiac failure is enormous. Few studies have been made which may be said to represent the life cycle of the disease. Two years ago I<sup>38</sup> published the results of a study which comprised 160 patients regarding whom I had reliable data as to the onset of rheumatic fever or chorea and the date and actual knowledge of death from cardiac disease. All the patients presented striking evidence of rheumatic carditis at the time of examination.

The cases were divided into three groups according to the type of lesion found clinically: (1) those with mitral involvement, 124 cases; (2) those with aortic involvement, twenty-one cases, and (3) those with both mitral and aortic involvement, fifteen cases. The incidence in the two sexes was equal.

In the group with involvement of the mitral valve the average age at which the first attack of rheumatic fever occurred and the presumable time at which the heart became involved was twenty-one years. The earliest age at which the infection occurred was seven years. The average duration of life in this group was only twenty-one years after the first attack of rheumatic fever; the average age at death was forty-two years. Even the maximal age limit was well less than the anticipated normal average.

The statistics in the group with aortic involvement were similar. The average age at which the first attack of rheumatic fever occurred was twenty-one years. The youngest patient at the time of the acute infection was aged seven years. The average expectation of life was, as in the group with involvement of the mitral valve, only twenty-one years after the initial attack of rheumatic fever; the average age at death was forty-three years.

In the third group, made up of those patients with both mitral and aortic involvement, the prognosis was considerably less favorable than in the other two groups. The average age at which the acute infection occurred was sixteen years; the earliest recorded age was eight years. The average

expectation of life was only sixteen years after the first attack of rheumatic fever; death occurred at the average age of thirty-two years. The greatest age of survival was forty-nine years.

This study did not show that recurrent rheumatic fever particularly influenced expectancy of life from the standpoint of carditis, although this probably would not hold true in a larger series of cases. Recurrences occurred most commonly in the first decade of life, and were recorded in 55 per cent of the cases. An instance of recurrent rheumatic infection did not occur after the thirtieth year of life.

#### COMMENT

Until the etiology of rheumatic fever is established, a certain specific therapeutic agent will not be available. It is doubtful that even with such knowledge, a specific cure will be forthcoming. It is imperative therefore that active steps be taken to institute measures that are supported by scientific reason and that may be instrumental in minimizing the incidence of rheumatic fever. Foremost among these measures are enforcement of the doctrines of hygiene, and education of the laity, particularly regarding the care of children.

The eradication of foci of infection is important, although no one would venture to offer such a procedure as a positive measure of prevention. The removal of infected tonsils is unquestionably indicated although rheumatic fever occurs in cases in which tonsillectomy has been successfully performed and in which other foci of infection have not been demonstrable. It is difficult to obtain reliable data on the influence of removal of foci of infection as a preventive measure, for in a large series many cases will occur in which removal has been incomplete.

One of the most important measures to be advocated in the treatment of rheumatic fever is a sufficiently long period of rest in bed. If carditis is present or is suspected, the period of rest should occupy months and not weeks.

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## HYDROPS GRAVIDARUM: REPORT OF THREE CASES

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Any attempt at classification of the toxemias of pregnancy has always met with indifferent success, and with failure of general acceptance, due to the fact that absolute signs for differentiation have not been discovered. Division into the so-called "renal" and "hepatic" types has served the purpose of gross differentiation, but even this is presumptive; for, in spite of evident anatomic differences, the clinical pictures are so manifestly identical as to make a clinical differential diagnosis almost impossible at the time of attack.

That a metabolic disturbance occurs during the eclamptic state has been an observation held by most investigators. As to just what metabolic disturbances take place, their etiology, and their *modus operandi* have been moot questions which exist today; and with the introduction of finer chemical and physical methods of study the opinions are tending to even greater divergence. As witness the work of Titus and his co-workers who maintain that the eclamptic disturbance is due to a fall in blood-sugar level anal-

agous to a hypoglycemia; Hofbauer, who is inclined to attribute histamine, or one of its closely related protein split products as the offender; Hinselmann, who feels that the etiologic factor at work is a physiochemical one resulting in capillary changes creating a cardio-vascular-ischemic change; and of Zangemeister, who in 1919 abandoned the organic toxin idea, and elaborated his theory of hydrops gravidarum with the daring

statement that water was the eclamptic poison.

These and other protagonists have proceeded to propound their views with the result that the recent obstetric literature is filled with work, in many ways contradictory, in many ways similar, and yet in no way conclusive. To attempt to follow just one point of view leads eventually to a blind alley from which there is no logical escape. One must recognize that the terms "toxemia" and "eclampsia" represent a group definition rather than an individualized entity. Hence the folly of attempting to place all cases in one strict class, or to apply one regular routine method of treatment to all cases falling into the general group.

In this country, the work of Zangemeister has been overlooked, due perhaps to the rather radical departure of his theory from the organic toxin idea; and from the fact that he fell into the error of placing all eclampsias into his group of hydrops gravidarum. Where Zangemeister has erred in concluding that all eclampsias are cases of hydrops, we have erred by losing sight of the fact that certain eclamptic cases do fall into his category. That hydrops gravidarum is a distinct entity, that it is one of the conditions which is classified as an eclamptic toxemia, and that its method of treatment must be differentiated from the usual treatment will be elaborated upon with the presentation of three cases.

Today we recognize hydremia as a normal physiologic occurrence in pregnancy. Miller, Keith and Rowntree showed that the blood volume was increased in pregnancy and disappeared in the puerperium. Pistuddi proved that the total mass of blood is increased at term with a tendency to an increase of watery contents and a relative diminution of proteins and of red corpuscles, which however are absolutely increased. In gravid women the mass of blood is 6.04 to 9.80 per cent, whereas in non-gravid women it is 5.23 to 7.80 per cent of the body weight. Plass has demonstrated a dilution of blood plasma during gestation and a return to normal about ten days after delivery. These findings show that a hydremia is present in pregnancy; and clinical findings have shown that this hydremia may be a basis upon which a pathologic state of fluid metabolism may be built.

*Case 1.*—Mrs. A. H., age 31, para-1. Past history negative. Present history of marked edema of lower extremities, face and abdomen occurring just one

week ago. Some headache and slight visual disturbances during past week. Patient states that she has gained 6 pounds in the last three days. She has gained 30 pounds in the last two months. Blood pressure elevated from 120 to 160 in one week. Blood pressure on admission 165/100. Weight on admission 203.5 pounds. Patient placed on a restricted protein diet. Fluid intake limited to 1,000 c.c. every 24 hours. Cracked ice given for thirst. Calcium chloride 12 grams daily by mouth. Blood chemistry findings normal. Urinalysis negative. Blood viscosity by Hess method 3.5. Wassermann negative. Weight first day 203.5 pounds. Second day 200 pounds. Third day 198 pounds. Fourth day 194 pounds. Fifth day bougie induction of labor with normal delivery. Weight on eighth day post-partum 166 pounds. Weight on discharge 163 pounds. Blood pressure on discharge 110/70. Patient states that normal weight is 160 pounds.

*Case 2.*—Mrs. G. W., age 32, para-4. Past history negative. Present history of marked increasing edema of entire body dating back two weeks. No headaches or visual disturbances. Blood pressure elevated 35 points in the last week. Blood pressure on admission 160/110. Patient states that she has gained about 15 pounds in weight in past two weeks. Weight on admission 175 pounds. Patient placed on a restricted protein diet. Fluid intake limited to 1,000 c.c. every 24 hours. Cracked ice given for thirst. Calcium chloride 12 grams daily by mouth. Blood chemistry findings normal. Urinalysis showed a slight trace of albumin with no casts. Blood viscosity by Hess method 2.9. Wassermann negative. Medical induction of labor with normal delivery. Weight on eighth day post-partum 145 pounds. Weight on discharge 142.5 pounds. Patient states that normal weight is 145 pounds. Blood pressure on discharge 120/82.

*Case 3.*—Mrs. M. J., age 30, para-8. Past history negative. Present history of increasing edema of lower extremities, abdomen and face for past three weeks. Elevation of blood pressure of 30 points in past two days. No headaches but slight visual disturbances. Blood pressure on admission 160/85. Examination reveals a patient 34 weeks pregnant. Weight on admission 164 pounds. Patient placed on a restricted protein diet. Fluid intake limited to 1,000 c.c. every 24 hours. Cracked ice given for thirst. Calcium chloride 15 grams daily by mouth. Blood chemistry findings normal. Urinalysis negative. Blood viscosity by Hess method 3.0. Wassermann negative. After being on this regime for 12 days patient was sent home. Weight on discharge 141 pounds. Patient subsequently had a normal delivery at home. Blood pressure on discharge 110/80.

These are cases to which the name of hydrops gravidarum is given because of the following characteristics:

1. Rapid and marked increase in weight concomitant with a generalized edema. The increase in weight is due to fluid retention in the tissues. The retention is of the tissues rather than of the kidneys.
2. Moderate, not marked, elevation of blood pressure.
3. Scant or no pathologic urinary findings. When present ante-partum the urinary findings disappear following the puerperium.



4. Normal blood chemistry.
5. Retinal findings only as resultant from the edema.
6. Lowered blood viscosity showing hy-dremia and blood dilution.
7. Remarkable response to calcium therapy cutting down the frequency of operative intervention.
8. Absence of renal or hepatic sequelæ following delivery.

The treatment for this condition is opposed to the generally accepted treatment of toxic pregnancies in which the usual milk diet and forced fluid regime is instituted. With the understanding that there is present a tissue retention the necessity for fluid restriction and for elimination becomes self evident. The response to calcium therapy is gratifying when used in sufficient dosage. The use of calcium in this condition was first witnessed by me while associated with the late Dr. W. E. Welz; and was based upon the findings of Meyer and Cohn, who demonstrated that calcium chloride given to infants caused a marked loss in weight due to loss of water.

#### SUMMARY

1. Whenever a gravid woman experi-

ences a sudden increase in weight with marked edema the condition of hydrops gravidarum must be thought of; especially when symptoms of renal disturbance are slight or absent.

2. The predominant factor in this condition is marked retention of fluids. There appears to be a disturbance in water metabolism.

3. Treatment is based on the principle of fluid restriction and the promotion of elimination by all channels.

4. Calcium chloride in heavy dosage acts as a marked diuretic.

5. The percentage of operative intervention will be decreased when the above factors are appreciated.

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## FAMOUS MEN IN MEDICAL HISTORY

### I. WILLIAM BEAUMONT\*

CHARLES L. HUDSON, M.D.

Modern physiology and medicine owe much to the simple observations of William Beaumont, although his medical education was certainly inadequate from the point of view of present-day standards. Chance favors the prepared mind, and it was chance that made Alexis St. Martin come under the observation of the inquisitive mind of Beaumont, with its eye for details and its ability to record observations truthfully. It is interesting to learn something of the man himself, his life and environment.

The name Beaumont has been prominent in the annals of French and English history for centuries, references dating at least to the middle of the eleventh century. In 1640 a William Beaumont settled in Saybrook, Connecticut, and became a personage of considerable importance and wealth in the little

community. In the third following generation, a William Beaumont left Saybrook after he became of age, and located in Lebanon, Connecticut. In two more generations removed, there is the record of the birth of the William Beaumont of this paper on Nov. 21, 1785, in the little society at Lebanon which was just beginning to recover from the embarrassed condition in which it found itself after the revolution. Lebanon had been a point of considerable importance during the war, for here the Council of Safety had held many meetings in the old war office and here George Washington had conferred with Governor Jonathan Trumbull upon the affairs of the nation. Although the community had been absorbed in the national conflict and had neglected somewhat its local interests, it still boasted the best common school in New England, one which had been founded by a Master Tisdale.

\*Read before the Victor Vaughan Society, Ann Arbor, Michigan, March 20, 1930.

Very little is known about Beaumont's early life but it may be assumed that his early schooling was above the average for his time. At the beginning of the nineteenth century, he was a boy of fifteen. The rapidly multiplying number of newspapers and magazines that were being brought to Lebanon must have conveyed to his receptive mind the knowledge of the vast progress of the world beyond his confined horizon. The Federal Party was passing into oblivion with the succession of Thomas Jefferson to the presidency; the states were taking an important place among the nations of the world, the population had passed the five million mark, and American law in general had been placed on a firm basis. Livingston and Monroe were negotiating the purchase of the huge Louisiana Tract of more than a million square miles and a few months time brought out the aura of impending danger of the War of 1812 because of the aggression of England's navy on American commerce.

It is not strange that as a knowledge of the larger world came to Beaumont in his puritanical country home, he should become restless and desire to enlarge his field of usefulness and experience; nor, are we surprised when we find him leaving his paternal home in 1806, starting out toward the north without any particular destination and arriving in Champlain, N. Y., in the spring of 1807. Inasmuch as farming was the principal industry here, and it was not to Beaumont's liking, he petitioned the trustees of the village school for the opportunity to teach this school. He received the appointment and taught for three years, gaining the respect and confidence of the people of Champlain. It was apparent that teaching was merely the means to the study of medicine for he occupied his spare time in reading medical books from the library of a Dr. Pomeroy, of Burlington, Vt., whom he had met doubtless on his way to New York from home.

After having read such works as would give him the fundamentals of medicine during his three years at Champlain, he attached himself to Dr. Benjamin Chandler, of St. Albans, Vt., as an apprentice. Under the system of training that Beaumont received, the apprentice accompanied his preceptor upon his visits to the patients, observing the doctor's methods of diagnosis and treatment. They were obliged to keep up

their reading, to learn the art of prescription writing, to become efficient in the practise of bleeding and cupping that was considered so effective at that time, to keep records of their cases and were occasionally permitted to perform an autopsy or to dissect a limb which had recently been amputated. It is evident that Beaumont made a wise choice of preceptor for there is every reason to believe that Dr. Chandler instilled into the mind of his young pupil the importance of developing the memory, his powers of observation and the habit of logical thought.

In 1812 the Third Medical Society of the State of Vermont granted Beaumont a license to practice. In this same year, rumors of war with England became a reality, and Beaumont secured an appointment as surgeon's mate in the Sixth Regiment Infantry. Not long after his appointment his unit went into action at Little York where an explosion of the British powder magazine killed and wounded great numbers of the American soldiers. The ensuing scene is best described by Beaumont:

" . . . Nothing but the groans of the wounded and the agonies of the dying are to be heard. The surgeons waded in blood, cutting off arms and legs and trepanning heads to rescue their fellow creatures from untimely deaths. . . . It awoke my liveliest sympathy and I cut and slashed for 48 hours without food or sleep."

Beaumont's work and bravery in this and in subsequent encounters was exemplary and brought forth official recognition from the military authorities.

Shortly after the treaty of peace in 1814, Beaumont resigned his commission in the army and entered in private practice with Dr. George Senter, the two of them announcing in the Plattsburg Republican (for they were to practice in Plattsburg) that they had commenced business in the line of their profession. The same newspaper announced that these two had received and offer for sale at the lowest prices, a large and well-selected assortment of "groceries," consisting of Madeira, Port, London Particular and Sherry, Wines, Cognac and French Brandy, Jamaica, St. Croix and New England Rum, Pierpont Ginger, Plug and Paper Tobacco, Pipes, Codfish, Shad, Mackerel, Chocolates, Spanish Segars, Window Glass, Snuff, Starch, Powder, Shot, Almonds, etc. This business was not appeal-

ing to Beaumont, and in about a year he sold out to Springer and Woodward, Beaumont confining himself to the private practice of medicine which was quite remunerative. At this time, however, Beaumont's friend, Joseph Lovell, had been appointed Surgeon General and was completely reorganizing the army medical corps. He offered Beaumont a clerkship which Beaumont accepted and later declined. The charm of army life was enticing to Beaumont, nevertheless, and in 1819 he made application for re-admission to the service. He was commissioned by President Monroe in 1820 as post surgeon, and was immediately ordered to Fort Mackinac in Michigan Territory, where he was to report to General Macomb, under whom he had served at Plattsburg. He had not been at Mackinac many months, however, when he requested a furlough to return to Plattsburg to marry Mrs. Deborah Green Platt, whom he had met while practicing at Plattsburg.

Beaumont's transfer to the Island of Mackinac was the first link in a chain of fortuitous circumstances which led ultimately to the important experiments on digestion and to Beaumont's recognition as a personage in medicine. Mackinac Island was a strategic military outpost early in the settlement of this northern territory, having first been fortified by the British. After the war of 1812 it was held by the States and it became particularly valuable in keeping the Indians of this region in submission. It had also been chosen by the American Fur Company as one of their trading posts. During the long winter months, the post was the epitome of somnolence and inactivity but early in June with the return of the Indians and voyageurs with the results of their winter's catch, the little village stirred from its long sleep and the beach became crowded with its tents and wigwams and seething mass of strange humanity.

One memorable day in June, 1822, suddenly from the company's store there is the loud report of a gun and amid the confusion and excitement the rumor spreads of an accident and there is the hurrying to the barracks for a doctor. In a few minutes, the post-surgeon, Beaumont, is at the unfortunate St. Martin's side making the examination. Beaumont's records of the case reveal the following description of the wound:

"The whole charge, consisting of powder and duck shot, was received in the left side at not more than

two or three feet distance from the muzzle of the piece in a posterior direction, obliquely forwards and outwards, carrying away by its force, the integuments more than the size of the palm of a man's hand; blowing off and fracturing the sixth rib from about the middle anteriorly, fracturing the fifth, rupturing the lower portion of the left lobe of the lungs, and lacerating the stomach by a spicula of the rib that was blown through its coat, lodging the charge wadding and fire in among the fractured ribs and lacerated muscles and integuments and burning the clothing and flesh to a crisp. I was called to him immediately after the accident. [1] found a portion of the lungs as large as a turkey's egg protruding through the external wound, lacerated and burnt, and below this another protrusion resembling a portion of the stomach, what at first view I could not believe possible to be that organ in that situation with the subject surviving, but on closer examination I found it to be actually the stomach with a puncture in the protruding portion large enough to receive my forefinger and through which a portion of his food that he had taken at breakfast had come out and lodged in his apparel."

Beaumont considered the case hopeless but considering it a duty to make some effort to save the man, he replaced the lung and stomach in their respective anatomical positions, debrided the wound and applied a poultice of flour, hot water, charcoal, and yeast. To Beaumont's surprise, the man continued to live, sloughing took place, and in about five weeks cicatrization and contraction of the external wound began. At about the sixth or seventh week, suppurating pieces of rib, clothing and shot had to be removed because of the tissue reaction around them. The deficiency in the lung and thorax was a suppurating wound for some time but later granulated over to Beaumont's entire satisfaction. The stomach, however, was much more obstinate and resisted his every effort at closure. The lips of the wound would not grow together and the integument and intercostal muscles could not be induced to grow across the aperture because of the necessity of keeping a gauze pad in place over the wound to retain the gastric contents in the stomach. Even after St. Martin recovered his health and spirits, a patency remained in the stomach wall which was partially closed by a flap of mucous membrane of the stomach which protruded through the opening. The thus formed natural valve could easily be displaced by the examining finger, however, permitting an observer to gaze into the stomach.

In 1824, much to Beaumont's despair and disgust, the county refused to keep St. Martin longer, and Beaumont took him into his own family although his salary at this time was only forty dollars per month. In the fall of that year Beaumont sent a report of



the case to the Surgeon General as a surgical case but it was not until 1825 apparently that he recognized the unusual opportunity for experimentation on the process of digestion. He then began the first series of experiments which later had world-wide publication. It must be remembered that he was still an army surgeon and his routine of duties must have interrupted his work often. Difficulties were encountered with "old fistulous Alexis" for St. Martin was not averse to taking French leave whenever the opportunity presented itself. On one occasion, after having been transferred to Niagara, N. Y., Beaumont received a furlough of two months in order to visit his family at Plattsburg and to present Alexis to some of the leading scientists of the day. The close proximity of their route to the native Canada of Alexis proved too much of a temptation to that unworthy creature and he left his benefactor for the scenes of his boyhood and was not heard of for several years. In the meantime, Beaumont was transferred to Green Bay, Michigan Territory, where he tried to forget his disappointment in Alexis with the new vaccination against smallpox. Interest in gastric experiments was again aroused, however, upon his receipt of a letter from an agent of the American Fur Company who stated that he had located St. Martin in Canada. He had been married and become the father of children and was working hard to support his family. Beaumont was forced to leave Green Bay for Fort Crawford on the Mississippi but made arrangements to have St. Martin and his family brought to him in the fur company's boats at his own expense.

Four years had elapsed since Beaumont had last seen Alexis, but upon St. Martin's arrival at the fort Beaumont began in earnest his second series of experiments. His occasional comments on his first series had caused considerable interest among medical men and many of his friends wrote him suggesting various types of foods to be tested in this human laboratory. With a thermometer, a few vials, and a sand bath for equipment, he set out to ascertain the effect of variations in the atmosphere on the temperature of the stomach, to find out whether the gastric juice began accumulating in the stomach during periods of fasting or even from the immediate or direct influence of hunger, and to ascertain the relative difference between natural and arti-

ficial digestion. Disregarding St. Martin's apparent docility, Beaumont now drew up with him one of the strangest contracts of history, wherein he promised St. Martin maintenance and a small wage in return for which Alexis was to submit to experimentation and to perform whatever menial duties that Beaumont saw fit to request.

Beaumont's labors were facilitated by the active interest his friend, Lovell, the Surgeon General, had in the work. Whenever possible, Lovell used his authority to arrange convenient places for Beaumont to work, also arranging a position for Alexis in the army so that he might be paid his wage from the Treasury rather than from Beaumont's pocket. It was on one of Lovell's arranged furloughs that Beaumont completed his third series of experiments in Washington. The fourth was completed at Plattsburg. While in the midst of these researches, Beaumont succeeded in enlisting the assistance of two of the leading scientists of the day, Robley Dunglison, Professor of Physiology of the medical department of the University of Virginia, and Benjamin Silliman, Professor of Chemistry at Yale. He sent these men samples of gastric juice for them to analyze, particularly to find, if possible, the solvent ingredients which had up to this time baffled scientists. These men found that the acidity of the juice was due to hydrochloric acid as Prout had contended some time before but for the most part their results were disappointing to Beaumont. He also sent a vial of the gastric secretion to Professor Berzelius in Stockholm, whose inability to find anything of interest in the juice, owing to the time consumed in transportation to Sweden, was Beaumont's greatest disappointment in the work.

The results of his experimentation were published in a volume in Plattsburg in 1833. The work is divided into two main portions: First, the preliminary observations on the general physiology of digestion in seven sections, namely, Of Aliment; Hunger and Thirst; Satisfaction and Satiety; Mastication, Insalivation and Deglutition; Digestion by the Gastric Juice; Appearance of the Villous Coats and Movements of the Stomach; and of Chylification and Uses of Bile and Pancreatic Juice; the second part contains detailed accounts of experiments and observations.

To appreciate Beaumont's studies it is

necessary to refer to the state of knowledge on the subject of the physiology of digestion in 1833, the date of publication of the book. Dunglison had that very year published a book on human physiology in which the old theories of concoction, putrefaction, trituration, fermentation, and maceration are all discussed and William Hunter is quoted to the effect that in spite of the advice of many physiologists, his view was that the stomach "is neither a mill, a fermenting vat, nor a stew pan; but a stomach, gentlemen, a stomach." The theory of chemical solution is being accepted. Reamur's tame buzzard had swallowed its metallic tubes filled with food; Dr. Stevens' stone-swallowing exhibitionist had swallowed the silver balls filled with food and later regurgitated them; and Spallanzani had conducted his familiar experiments with the sponges on strings. Tiedman and Gmelin and Prout had done much to solve the problems of the chemistry of the juice. It thus remained for Beaumont to demonstrate the phenomena occurring in the stomach during digestion, the precise mode of action of the juice, the nature of the juice itself, and its action outside the body. Osler sums up the important results of Beaumont's observations as follows:

1. The accuracy and completeness of the descriptions of the juice itself, quotations from which appearing in many current texts in physiology.
2. Confirmation of Prout's observation that the important acid of the gastric juice is hydrochloric.
3. Recognition of the fact that the essential elements of the gastric juice and the mucus were separate secretions.
4. The profound influence of mental disturbances on the secretion of the gastric juice and on digestion.
5. A more accurate comparative study of digestion in the stomach and out of it.
6. Refutation of Magendie's teaching that bile flows normally into the stomach and presentation of the fact that water rapidly disappears through the pylorus.
7. The first comprehensive study of the motions of the stomach.
8. A study of the comparative digestibility of various articles of diet, which is one of the important contributions to practical dietetics.

Beaumont's opinions on the motions of the stomach agree with those of Cannon, who worked with the bismuth meal and the

X-ray. Pawlow's conclusions that the secretions of the gastric juice is dependent on the taking of food and that the fasting stomach is entirely empty are antedated by Beaumont's. Beaumont was slightly in error in believing that the catheter with which he withdrew the juice from the stomach stimulated the flow of juice, for we do not believe today that mechanical stimulation alone will cause secretion. The facts that the gastric juice is discharged into the stomach gradually and upon requirement and that emotional depressions influence secretion are held by him and Pawlow alike. The determination of the connection between the central nervous system and the stomach was made by Pawlow, however, through his sham feeding experiments. Pawlow pointed out that the so-called appetite juice results from stimulation through the vagus nerve. Food directly introduced into the stomach will, of course, stimulate the secretion of the gastric juice but the process will be delayed and the flow will be poorer in quality and in quantity. Limited chemical knowledge did not permit the determination of the ferments of the juice but it is shown that in Beaumont's statement that the gastric juice "contains some other active chemical principles," he anticipated in a measure Schwann's discovery of pepsin. It is of little consequence that he failed to realize that contractions of the stomach are associated with hunger sensations and that the seat of hunger sensation is the nervous system, since he paved the way for these and other findings by subsequent investigators.

The remaining years of Beaumont's life are soon related. For two or three years after 1832 he was without any definite station, and upon his own request he was permanently located at the arsenal at St. Louis, Missouri. He moved his family to St. Louis and received permission to carry on private practice in addition to his military duties. His friend Lovell was replaced in 1836 as Surgeon General by Thomas Lawson, who was suspected of having some prejudice and animosity for Beaumont. There was no longer active support from the office of the Surgeon General; in fact, disregarding Beaumont's years of active service and important contributions to medicine, Lawson ordered him to serve in Florida. Beaumont protested on the grounds of age and service, but the order was not countermanded. Beaumont then resigned from

the service and settled down to private practise in St. Louis where he became very popular and quite well to do. The medical profession elected him to office in their societies and offered him the chair of Professor of Surgery in the Medical School and the general public presented him with a remunerative practice. These days must have been a pleasant relief from army regulation although he must have missed the army life as many prominent in military circles were disappointed in losing him from the service which Beaumont loved so well.

In March, 1853, while returning home from a visit to a patient, he slipped on an icy step, striking his head on the stonework. He did not fully recover his senses after the fall, and a few weeks following the fall, developed a carbuncle on his neck accompanied by an intractable fever and died on April 25. St. Martin lived a longer but much less fruitful life. The last reports from him alive were that he had become a drunkard, scraping out a meager existence on a farm at St. Thomas, near Montreal. Osler writes that upon hearing of St. Martin's death he communicated with the parish priest, urging him to secure the privilege of an autopsy and offering a fair price for the stomach. The

family of Alexis refused and went so far to defeat the plan for an autopsy as to hold the body at home until putrefactive processes had begun and then to bury him eight feet below the surface of the ground to prevent attempts at resurrection.

Beaumont's work becomes all the more interesting when we realize that Alexis was not the first gastric fistula encountered by science. At least four or five cases had been reported previously and still science had not benefited by observations on any of them. As Osler aptly puts it, the man and the opportunity had met and then had sprung the elucidating experiments for which every physician and every patient with a gastric complaint owes a debt of gratitude. To Beaumont belonged the gift of strong natural powers of observation, of a peculiar sagacity, of a zeal to keep abreast of the times, and of an honesty that reveres the truth above the sensational. In these days of specialization in medicine, Beaumont's life is a source of inspiration and encouragement for clinical research among all physicians and it is a kindly admonition to the medical student that commencement should actually mean a beginning and not the end of education.

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## THE WORK OF A PUBLIC HEALTH COMMITTEE

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L. O. GEIB, A.B., M.D.\*

DETROIT, MICHIGAN

The Public Health Committee of the Wayne County Medical Society is composed, at the present time, of 18 members, having representatives from the various branch societies, such as the East Side, West Side, Highland Park, Young Men's Study Club and some selected at large. The membership is then divided into sub-committees composed of about four members each to look after such activities as the Summer Round-up, Pre-School Child Ex-

aminations, Clinical Conferences, T. B. Campaign, Venereal Clinic, Rules and Regulations of Herman Kiefer Hospital and the Toxin-Antitoxin campaign.

The Pre-School Child campaign this year will be conducted for two weeks, the publicity and educational work being done by the Department of Health and the Parents and Teachers Association, various households solicited and literature distributed by the Camp Fire Girls; the doctors making the examinations gratuitously if so requested. The examination blanks used are made in triplicate; the original being retained by the physician for his files and records; a second being given to the child to return to school; the third being sent to the Board of Health. The Committee feels that many defects will be found and remedied and that they will not alone sell pre-

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\*Dr. Geib graduated B.A. from Macalester College, St. Paul, 1905; he attended the Detroit College of Medicine, where he obtained the M.D. degree in 1912. He was chairman of the Public Health Committee of the Wayne County Medical Society for two years. In November, 1929, Dr. Geib was appointed as one of the medical members of the Detroit Board of Health. The paper which appears in this number of the Journal M. S. M. S. was read before the Jackson County Medical Society April 15 and printed in the Bulletin of the Wayne County Medical Society August 26. It is here published at the request of a large number of members of the Society who are interested in the immunization of children of the pre-school and early school age.—Ed.



ventative medicine but will make beneficial contacts for themselves.

Clinical Conferences on contagious diseases are now being held every Wednesday morning at ten o'clock at the Herman Kiefer Hospital with an average attendance of about fifty physicians. A stenographer takes a record of the clinic. This is mimeographed and at the next meeting a copy is given to everyone who registered at the previous meeting. The hospital authorities feel that a number of much earlier diagnoses in contagious diseases, especially cerebral spinal-meningitis, have been made since these conferences have been instituted.

The Tuberculosis and Health Society approached the Public Health Committee a year ago in regard to a campaign for suspicious T. B. cases, especially girls who are working in the various department stores. They have formed clubs which are designated as the "Rainbow Trail to Health, Wealth and Happiness." Individuals in these clubs, under suspicion of tuberculosis, were to be sent to various physicians who had signified their willingness to make these examinations. Over 600 physicians had agreed to do this work and each physician was to make these examinations at from two to five dollars, the welfare worker to determine the financial status of the applicant.

In regard to the Venereal Clinic the Department of Health has made available a venereal clinic for instruction and diagnosis in the treatment of these diseases, giving a course lasting about six weeks.

Another committee on Rules and Regulations of Herman Kiefer Hospital has to do with an attempt to formulate regulations whereby the family physician can more advantageously treat his patients, both private and charity. As yet nothing definite has been accomplished.

Until the past three or four years there has been more or less open hostility between the Detroit medical profession and the Department of Health. This was seemingly due to lack of understanding. The health department felt that the private physician was uncoöperative while the medical profession accused the Department of Health of practicing medicine. Any project in preventative medicine sponsored by the Department of Health was viewed with suspicion. Quoting from the City Health Bulletin of January, 1930, of the Department of Health:

"The change from clinics and private physicians to private physicians only was not made until a coöperative plan had been carefully worked out by the Public Health Committee of the Wayne County Medical Society and the Department of Health and the plan approved by the Wayne County Medical Society. Briefly, the plan provided that the physicians of the city would give toxin-antitoxin and Schick tests. The physicians agreed to give these services free to those who could not afford to pay, the Department of Health agreeing to remunerate the physicians for such services rendered to indigents at the rate of fifty cents (50c) per injection of toxin-antitoxin and one dollar (\$1.00) for the Schick test, including its reading. Physicians further agreed to make reports of all toxin-antitoxin and Schick tests given on postal cards provided for this purpose. The Department of Health, in addition to the reimbursement for indigent cases, agreed to supply, free of charge, toxin-antitoxin and Schick material and Schick heated control material (through eight distribution centers established for this purpose), postal cards for reporting work done (self-addressed business cards for the receipt of which the Department of Health pays two cents, nothing being paid for those not used), and to keep records of children immunized and to carry on an educational publicity campaign for the purpose of focusing public attention on the need for diphtheria protection.

This publicity campaign included newspaper articles, paid newspaper advertisements, street car and bus advertisements, outdoor bill boards (kindly donated by the Walker Sign Company), home visits urging diphtheria protection, by nurses of this Department and agents of the Metropolitan Life Insurance Company, particularly to the homes of babies born during the preceding year, short talks on diphtheria protection to Parent-Teacher Associations, Women's Clubs and other organizations, articles in periodicals and magazines, and radio talks. As soon as a third dose of toxin-antitoxin is reported that child is sent a certificate stating that he has had the third dose of toxin-antitoxin but that the certificate is of no value until a Schick test has been made six months later and urging the parent to take the child to the physician on such and such a date (the date six months from that time being filled in) for the Schick test.

Space is provided on the certificate for the date and result of the Schick test and the signature of the physician. Children for whom records of a negative Schick test have been received are sent a certificate of immunization. As a means of stimulating an interest among the children, particularly the preschool children, the Children's Army Protecting Detroit Against Diphtheria has been organized. The wearing of a green button bearing the inscription just quoted signifies membership. These buttons are sent to all children who send in their names as having received their toxin-antitoxin treatments, giving also the name of the physician who gave the treatments. One of the daily papers, the Detroit Times, has been most helpful in carrying a daily notice of this project and as a result over 100 additional requests per day were received for buttons.

This description fits the programs of 1928 and 1929 equally well. There was, however, one important difference between the two programs. In 1928 the physicians of the city in general, through the local medical society, agreed to cooperate in the plan. For the most part they did cooperate splendidly but we must remember that not all physicians are members of the local medical society and that many who are members are very irregular in their attendance at meetings and are, therefore, often unfamiliar with the actions of their society. For these reasons not infrequently a child was taken to the office of a physician who was entirely unacquainted with the program and less frequently to a physician who was opposed to the plan. In order to avoid these difficulties, which, while they were not frequent, were of sufficient importance to warrant an attempt to eliminate them, in 1929 a letter was sent to all the physicians of the community outlining the diphtheria prevention program (as worked out by the Public Health Committee of the Wayne County Medical Society and the Department of Health) and asking them whether or not they wished to cooperate. Those wishing to cooperate were asked to signify in writing their willingness to give toxin-antitoxin at such hours as they might specify for \$1.00 per injection and free of charge to those who could not afford to pay (it being understood that the Department of Health would reimburse them for such indigent cases at the rate of fifty cents per injection

of toxin-antitoxin and \$1.00 for the Schick test, including the reading), to sign for toxin-antitoxin and Schick material taken and to send in to the Department of Health reports of work done, and to permit the use of their names on lists of physicians to whom prospective diphtheria protection patients might be referred. Approximately 900 of the 1,500 or so practicing physicians of the community have expressed their willingness in writing to cooperate in the plan. Many of the 600 physicians who did not sign the agreement are practicing specialties in which there would be no opportunity of undertaking diphtheria protection. It is estimated that approximately 80 per cent of those in a position to give toxin-antitoxin or the Schick test are on the list of cooperating physicians. In all probability a considerable proportion of the 20 per cent who are not on the list are giving diphtheria protection treatments to their own patients but do not care to have additional patients referred to them. The city has arbitrarily been divided into 27 districts and there are thus 27 lists of cooperating physicians. These lists are in the hands of the Department of Health nurses, insurance agents and other field workers having an opportunity of talking diphtheria protection. A prospective patient with no private physician is given a list of the physicians in his neighborhood who are willing to undertake diphtheria protection in accordance with the plan just outlined. Many patients are referred to such physicians through telephone calls received at the Department of Health. Before the plan was actually put into operation, three meetings of the cooperating physicians were held at which the entire program was discussed in detail and demonstrations of the Schick test and its reading given in order that there might be no misunderstanding concerning it.

The program of 1929 has proven superior to that of 1928 in that now we have a definite place (the names and office addresses of cooperating physicians), a time (the hours indicated by the physicians), and a price (\$1.00 per injection or free of charge to those unable to pay) which can be given the prospective patient. Furthermore, we know that all those to whom patients are referred are thoroughly acquainted with the program and cooperating in it.

The plan of having the private physicians do the work instead of having it done through clinics is resulting in a larger per-

centage of immunizations of preschool children in that the large number of physicians' offices provides a place within a reasonable distance of practically any home and the wide variety of office hours permits the choice of a convenient hour for taking the preschool child. There is also the very far-reaching benefit of new contacts between family and physician, which contacts may result in the physician becoming the health advisor for the family.

The 1929 program did not actually commence until November 17. From January 1 through November 16, only 4,063 children were given toxin-antitoxin, while from November 17 through December 31, 10,776 children commenced their toxin-antitoxin treatment.

While this work was done with the approval of the medical society, the rank and file felt that the clinics were taking away patients who could pay and rightfully belonged to them. Children were being trained to seek and receive something for nothing, and the private physician on account of the free clinics was neglecting to use preventative health measures. A great many individuals were not receiving preventative treatment, because the private physician did not have an incentive to preach or practice it. The more contacts the physician has with his clientele the better and more able he will be to note their physical and mental idiosyncrasies and peculiarities. He will be able to note and correct defects; he will retain a personal interest in his families; he will also be thinking along preventative health measures and developing a health consciousness.

In the spring of 1928 the Public Health Committee received a request from the Council of Parents and Teachers to assist in the so-called summer roundup. This request was thoroughly discussed and it was thought that the Parents and Teachers through the Board of Health were trying to subsidize the physicians. Dr. Vaughn, the commissioner of health, had insisted at the meeting that the private physician charge for the examination. A sub-committee was appointed who worked out the following plan:

The examination to be made over a one week period of all children entering school in the following fall; the examination to be made in the doctor's office, reported on blanks which were to be furnished by the

Department of Health; the blank to be given to the child, who presented it on entering school. This plan, especially the fact that it was to be made without charge, was done for the reason that the committee felt that if a charge were to be made the campaign would be unsuccessful and that the Department of Health would have a good excuse in another year to hold the examinations by the clinic method. While the plan did not meet with a great deal of success, it at least gave us a nucleus for a method of conducting all future campaigns.

In the fall of 1928 the Public Health Committee decided that all campaigns such as toxin-antitoxin, examinations of preschool children, examinations of susceptible tubercular cases in coöperation with the Tubercular Society, the cancer campaigns should be conducted on the following basis. Examinations should be made in the doctor's office; all publicity should be given by the Board of Health and censored by the Public Health Committee. The material such as toxin-antitoxin to be furnished to the physician gratis by the Department of Health.

The Committee at first had to sell itself on this plan. After about twelve meetings the Health Commissioner and his assistants were invited to discuss the plan. Much to our surprise after various modifications of details, the Health Commissioner enthusiastically agreed to coöperate. Again quoting from the Bulletin of the Department of Health of January, 1930:

"The community through its health department should assume the responsibility of acquainting its people with the facts concerning disease prevention and health promotion. Each individual should have sufficient information on the worth of such procedures as, for example, the complete physical examinations, regular medical attention for babies while well, etc., both as to the dangers which may be avoided and the real benefits which may result from them, so that he or she may reasonably decide whether to accept or reject such procedures. Services indicated by these procedures, medical examination, dental care, etc., should, we believe, be given by private physicians, dentists, etc., wherever people can pay for such services and for indigent persons by clinics. It is possible that at some time in the future even the indigents, as far



as preventive medicine and health promotion are concerned, may be cared for by the private physician, dentist or other specialist in his own office, the physician or dentist being paid a nominal fee for such service to indigents.

"The chief function of the Department of Health as applied to individual health is then to make as universally known as possible the facts concerning disease prevention and health promotion. These facts must be presented in an effective, popular and easily understandable manner. In order to get people to accept and practice the procedures advocated they must be repeatedly and forcibly presented. In carrying on this work of health education, we may use newspaper stories, paid advertisements, demonstration clinics, educational home nursing visits, pamphlets, stories in magazines and other popular periodicals, radio talks and lectures. The interesting, popular, yet forceful and truthful presentation of health principles is probably the point of greatest weakness in many departments of health and is therefore calling for particular attention and effort on the part of this department. The old saying that 'you can lead a horse to water but you cannot make him drink' is especially applicable to health education. It is not very difficult to obtain rather general acquiescence to health principles but to bring about any real benefit to the health of the community one's teachings must be effective enough to result in people actually doing the things recommended. Practically all new principles and procedures, even though they are scientifically sound and practicable, must be demonstrated before we can expect people in any very large numbers to practice them. We must show people by actually doing the work, and advertising to the fullest extent the results, that the procedure is workable, that it doesn't kill people or produce harmful results and that it does do the thing we claim for it. This type of health education used in establishing health practices which have not yet been widely used in that particular community usually takes the form of demonstration clinics. Such a clinic should, we believe, continue for

such length of time as it necessary to thoroughly establish the desired procedure in the community, at which time the clinic should be abolished, except for indigent persons, and the supplying of services rendered in such clinic turned over to the proper persons, physicians, dentists, nutritionalists, psychiatrists, etc. After such establishment of procedure has been effected and the clinic abolished, the Department of Health still needs to continue its general educational efforts, stories, advertisements, talks, home nursing visits, etc., in order to focus public attention upon the need for continuing this procedure.

"It is, we presume, a perfectly obvious fact that the Department of Health should continually strive for new and more effective methods of preventing disease and promoting good health, but should not present this information to the public until it is 'usable' information.

"It has been thought wise to go into the question of individual versus community responsibility for health in at least a brief way for the reason that the policy of this Department is founded upon the principles enunciated in the preceding few paragraphs and obviously influences all its work. All of the Detroit Department of Health clinics are demonstration clinics and will be abolished, except for indigent persons, as soon as the practices advocated in them are thoroughly established. Feeling that diphtheria prevention had been sufficiently well demonstrated, between 1921 and 1927, in 1928 the clinics for this purpose were abolished, and since that time the physicians of the city have been carrying on all the work of protecting children against diphtheria.

"To state the problem in the briefest possible manner, this Department believes that as far as individual health is concerned—that group of things over which the individual has the chief control—its function is to create a demand for well proven scientific procedures, the supply for which will be rendered by those persons best qualified to supply the demand—the private physicians, dentists, nutritionalists and psychiatrists."

## MICHIGAN'S DEPARTMENT OF HEALTH

C. C. SLEMONS, M.D., Commissioner  
LANSING, MICHIGAN

## THE YEAR'S WORK IN CHILD HYGIENE

The activities of the Bureau of Child Hygiene and Public Health Nursing reached eighty counties (all but Sanilac, Macomb and Isabella) during the year ending June 30, 1930. In twenty of these counties, the only activities were special studies related to childbirth, but in the sixty other counties the services included Women's Classes, Child Care Classes, Immunization Campaigns, and other similar activities. The year marked the completion of the Maternal Mortality Study (of 1,627 maternal deaths) and the beginning of a new study of a similar number of births survived by the mother. Following is a brief description of the various activities:

## MATERNAL MORTALITY STUDY

In April, 1927, a study was begun of deaths of women in Michigan from causes connected with childbirth, the study to include such deaths from July 1, 1926, to December 31, 1928. The study was completed in January, 1930. In the city of Detroit, Dr. Joseph H. Curhan, of the Detroit Department of Health, carried on the field study of Detroit maternal deaths.

A total of 1,627 deaths was studied, narrative and tabulated reports of which are submitted for filing. The outstanding facts brought out by the study are as follows:

1. The need of intensive educational work among young women, indicated by the fact that 53 per cent of the deaths were of women under 30 years of age.
2. The number of preventable deaths—42 per cent from puerperal septicemia and 21 per cent from puerperal albuminuria, or 63 per cent from these two conditions which are largely preventable, or which yield to treatment if seen in time in the majority of cases.
3. The inadequacy of prenatal care—52 per cent had no prenatal care.
4. The percentage of operative deliveries. Of the cases which went through delivery, 53 per cent were operative.
5. The appalling number of abortions—22 per cent of the total maternal deaths followed abortions.

## A STUDY OF BIRTHS SURVIVED BY MOTHERS

As a control to the maternal mortality study, a study of births which were sur-

vived by the mothers was begun April 1, 1930. It is planned to include in this study the same number of cases in each county as there were maternal deaths during the period included in the maternal mortality study. To date the study has been completed of 556 cases in 64 counties. It is too early to compare the two studies, but the figures already obtained indicate a much higher type of prenatal care given these survivals, a larger percentage of planned hospital deliveries, and of normal deliveries, and an exceedingly low percentage of sepsis, albuminuria or other complications of pregnancy or childbirth. A tabulated progress report of the study is submitted for filing.

## CHILD CARE CLASSES

The demand for classes on infant and child care for girls in rural schools continues. Staff nurses conducted 1,447 classes with an attendance of 27,273; other public health nurses held 898 classes with an attendance of 23,076, making a total of 2,345 classes held and a total attendance of 46,349.

## WOMEN'S CLASSES

Classes for women have been held in rural districts of 14 counties, by two women physicians and a graduate nurse. A total of 204 classes was held with an attendance of 2,670. Many requests are already on file for a return of the classes next year.

## COUNTY NORMAL SCHOOLS

As reported last year, the Bureau of Child Hygiene and Public Health Nursing has coöperated with other bureaus of the Department in giving a series of lectures to county normal training classes. Field physicians of the Bureau gave the lectures on control of communicable disease and on child hygiene. Forty-eight county normal schools were given these lectures together with demonstration inspections of school children with a total attendance of 1,103.

## PRENATAL NURSING

An educational nursing service to prospective mothers was given to the following counties: Clinton, Ingham, Ottawa, Alpena, Kalamazoo, Benzie and Mason counties. The length of the service varied from four months to one year. The service has been terminated in Benzie, Clinton and Ingham,

and in Ottawa county the supervisors voted to take over half the expense of the nursing service beginning January 1, 1930.

The type of service has been altered this year. It has been found difficult to locate all of the prenatal cases in a county, so now the nurse also supervises young infants and preschool children with special emphasis placed on the importance of immunization of these age groups.

During the year 878 prospective mothers have been under supervision; there were 3,816 prenatal calls made, 2,813 postnatal, 4,104 to mothers of young infants, and 1,842 to mothers of preschool children, a total of 12,575 home visits.

#### BREAST FEEDING CAMPAIGNS

During the summer the nurses, who during the school term conduct child care classes, are placed in counties where little or no public health work is being done. They secure names of newborn infants from township clerks and visit the mothers and advise them about the care of the babies, stressing the value of breast feeding. This year more emphasis has been placed on immunization of young infants than in previous years and mothers have been urged to take their infants and young children to the family physicians and have them immunized. Gogebic, Luce, Dickinson, Cheboygan and Gladwin counties have had this service, and mothers of 1,328 babies were visited.

#### IMMUNIZATION CAMPAIGNS

In five counties, Chippewa, Arenac, Gladwin, St. Clair and Calhoun, immunization campaigns were conducted. In Chippewa county, at the request of the County Medical Society, immunization in the rural parts of the county was done by the State Department of Health. In the other counties local doctors did the immunizing and were paid out of local funds. Nurses from the Bureau of Child Hygiene and Public Health Nursing assisted the doctors in all the counties. In all, approximately 9,000 children were immunized. Contacts were made in other counties but other public health nurses completed the work and final reports are not yet available as to results.

#### CERTIFICATES OF REGISTRATION OF BIRTH

As in former years, parents of all children born in Michigan during the year received certificates of birth registration. Included with the certificates was a condensed pamphlet on infant care, called "A Message to

Parents," and also a small pamphlet urging early immunization. A total of 99,437 such certificates was distributed during the year.

#### MOTHER AND BABY HEALTH CENTERS

Permanent local health centers for mothers and babies were supplied with blanks and literature as in the past. The majority of these centers made a monthly report, the Bureau having received reports from approximately 70 such centers. Reports showed that 28,706 infants were examined at the centers, and the prenatal attendance was 2,170. There were 28,134 home visits made from these centers by public health nurses.

#### LITERATURE

Literature on prenatal, infant and child care is distributed on request, with the exception of diet cards, which are distributed to physicians only, or at the request of physicians. During the year approximately 60,000 pamphlets were distributed, exclusive of the prenatal letters. There were 34,571 prenatal letters sent to prospective mothers, which, with the other literature, makes a total of 94,571 contacts through literature.

Requests for talks on all phases of prenatal, infant and child care are frequent, and 669 such talks were given to audiences numbering 15,319.

#### SUMMER ROUND-UP OF THE CHILDREN

As seventh vice president of the Michigan Congress of Parents and Teachers, the director of the Bureau has had charge of the Summer Round-up of the children, which has for its object the entering into school in the fall of a group of children free from remediable defects. The first step was to send letters to presidents of county and district medical societies, 54 in number, stating that the State Medical Society through its Council had endorsed the project, and urging coöperation of the various county and district medical societies. Later letters were sent to presidents of local Parent-Teacher Associations urging that their associations register for the Round-up. In all, 2,794 letters were sent in the interest of the Round-up, following which 390 local associations registered. At the National Congress of Parents and Teachers held in Denver in May, 1930, Michigan was awarded a medal for the greatest number of registrations of any state in the Union. Figures are not yet available as to the number of



children examined or the number of defects corrected.

#### MAY DAY CHILD HEALTH DAY

The observance of May first as Child Health Day is well established in Michigan. All the organizations interested in child welfare coöperated in the state-wide programs, and were represented on the May Day Committee which met in the office of the Bureau of Child Hygiene and Public Health Nursing early in March, 1930, to plan for the observance of May Day in Michigan. Following this meeting, County May Day Committees were formed with the county nurses as chairmen. Interest was further stimulated by the issuance by Governor Green of a proclamation setting aside May 1 as Child Health Day in Michigan. Immunization campaigns, clinics, physical inspection in schools, health talks and health plays in schools, as well as the more spectacular Maypoles, pageants and parades all made May Day in Michigan a day of definite value to children.

L. R. S.

#### INDUSTRIAL HYGIENE

Many industries have recognized the opportunity, through their health departments, to practice "preventive medicine." From their experience and the data obtained from physical examination of the applicants for employment come valuable suggestions for proper balancing of the health program of any community.

These industries have noted that a very high percentage of physical defects are found in applicants under 20 years of age, and that the nature of defects listed is very similar to that found among school children. Their conclusion is that many of these defects should have been detected and corrected during school life, and certain helpful health habits established that would carry over into adult life.

From these progressive health departments in industries comes the suggestion that if children could be brought to adolescence and young adult life with good nutrition, proper health habits and physical defects corrected, the problem of preventive medicine in industry would be partly solved.

Assuming that it is rational to believe that the basis for industrial health work is grounded largely in school health supervision, and aiming to vindicate, if possible, industry's charge of inefficiency against the

health work in the schools, the State Department of Health has sought to gather certain data from the health records of schools and industries. Owing to the lack of standardized record forms and the varying methods of examination procedure it is difficult to properly evaluate these findings. However, they present an interesting and challenging study.

This study for comparison was based on 147,000 pupils in public schools; over 20,000 in regular high schools and 5,000 in vocational, technical high schools, and 44,000 special cases. In industries, mercantile establishments and public utilities, over 50,000 employees were included.

Graphs were made of the data gathered. They show a marked similarity, as to nature and percentage of defects, of high school and vocational school students to the employees of 16 to 20 years of age. The percentage of defects found in students failing in scholastic work in high and vocational schools nearly paralleled the percentage of physical defects in applicants for employment between the ages of 16 and 25 years, and the ratio of rejections from these groups was almost constant.

The industries may thus be leading the schools to recognize and respond to their responsibility for a more extensive and practical health education program.

F. A. P.

#### FREEZING TOXIN-ANTITOXIN

The following communication from the National Institute of Health (Hygienic Laboratory), Washington, D. C., in regard to the effect of freezing upon toxin-antitoxin mixtures will be of interest to physicians:

*"To all Manufacturers of Diphtheria Toxin-Antitoxin Mixture:*

Gentlemen:

"Recent experiments in freezing current samples of 0.1 L- toxin-antitoxin mixtures have shown that under temperature conditions encountered in modern automatic refrigeration some mixtures will become toxic. Solid freezing for considerable periods (18 hours) causes mixtures to become relatively inert, but slight freezing for short periods has caused increased toxicity in some products. This increased toxicity is slight, but is believed to be sufficient to cause more or less severe local reactions, probably explaining such reactions which have been reported. There may be no

change in the physical appearance of the product.

"It is suggested that manufacturers place on the outside wrapper for this product, the following statement in red:

"Freezing damages this product;  
store at 5° to 10° C (40° to 50° F).

"All mixtures tested at the National Institute of Health have not become toxic under the treatment given, but a sufficient number have shown this change to warrant a warning to users, particularly since prolonged freezing is detrimental to the antigenic properties of mixtures.

Respectfully,

(Signed) G. W. McCoy, Director,  
National Institute of Health  
(Hygienic Laboratory)  
Washington, D. C."

#### ENGINEERING

Summer work in the Bureau of Engineering is always heavy, and this year has been no exception to the rule. Inspection of highway drinking water supplies has kept four men on the road constantly, sending in samples for testing, and posting the safe supplies. While final figures are not yet available, indications are that the mileage covered, the number of supplies inspected, and the percentage of safe supplies will average about the same as last year.

Resort inspection has been carried on by seven men, two of whom were milk inspectors from the State Department of Agriculture, assigned to the Department of Health for this special piece of work. The state has never had such a thorough summer resort campaign. A complete list of the resorts inspected, together with the ratings given them, will be published by the Bureau of Engineering as soon as the data can be tabulated.

Construction work at state institutions has progressed rapidly during the summer months. The entire sewerage system is being remodeled at Lapeer, and a new sewerage system is being installed at Adrian. Bids have been received for the construction of the sewerage system at the Ypsilanti State Hospital near Saline.

#### DR. CASE JOINS STAFF

Dr. Muriel A. Case joined the staff of the Bureau of Child Hygiene and Public Health Nursing on September 15, filling the vacancy caused by the resignation of Dr. Florence Knowlton on August 1. Dr. Case received her medical training at Boston

University and has done special work in the Marine Biological Laboratories. She will assist in the special study now being carried on of births survived by mothers, in addition to teaching classes in child care and lecturing in the county normals.

#### MOUTH HYGIENE

Mouth hygiene activities of the Michigan Department of Health for the fiscal year ended June 30, 1930, are summarized in the annual report of William R. Davis, D.D.S., Director of the Bureau of Mouth Hygiene.

Since the budget of the bureau provides only for a director and a part-time stenographer, work was largely advisory, with emphasis upon educational measures. Effort was made to provide programs and educational material simple enough for the country school and rural community and yet capable of elaboration to fit the needs of larger and better organized communities. This was supplemented with as much field work in consultation, demonstration and lectures as the time of the director permitted. Coöperation in the Department's county normal program gave him an opportunity to present mouth hygiene facts to 1,103 prospective rural teachers, and lectures and demonstrations before the classes of the Training Station for Health Officers and Public Health Nurses provided valuable contact with prospective health workers.

The following brief tabulation indicates the work done:

Number of places visited.....	142
Number of addresses given.....	176
Total attendance.....	8,396
Adult .....	52
Attendance .....	2,620
School .....	109
Attendance .....	5,149
Professional Groups.....	15
Attendance .....	627
Conferences outside of office.....	113
Demonstration dental examinations....	109
Number examined.....	3,606

#### Leaflets

Requests .....	1,151
Distributed:	

Dental Hints for Prospective Mothers .....	5,413
Baby Teeth.....	64,077
Permanent Teeth.....	74,427
Total .....	143,917

#### School Blanks

Requests .....	184
Distributed .....	106,137

## TRUTH ABOUT MEDICINE

### NEW AND NON-OFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

**Pyridium**—Phenylazo-2-6-diamino-pyridine monohydrochloride.—The monohydrochloride of an azo dye of the pyridine series, phenylazo diamino-pyridine. Pyridium has marked penetrating power and is non-toxic and non-irritant in therapeutic dosage. It is rapidly eliminated through the urinary tract. It is bactericidal in aqueous solution against staphylococcus, streptococcus, gonococcus, *B. coli* and even *B. diphtheriae*. It is proposed for use in gonorrheal infections, urinary diseases, and in colon bacillus and mixed infections. The drug is supplied in the form of Aqueous Solution of Pyridium, 1 per cent; Pyridium Ointment, 10 per cent; and Pyridium Tablets, 0.1 Gm. Merck & Co., Inc., New York.

**Mead's 5 D Cod Liver Oil with Viosterol**.—A brand of cod liver oil with viosterol 5 D (N.N.R.). For a discussion of the actions and uses of cod liver oil with viosterol 5 D, see New and Non-official Remedies, 1930, page 257. Mead Johnson & Co., Evansville, Ind.

**Ephedrine Nasal Jelly-Maltbie**.—It is composed of ephedrine sulphate-N.N.R. 1 per cent, menthol 0.25 per cent, and sodium benzoate 0.5 per cent in a glycerite of tragacanth base. For a discussion of the actions and uses of ephedrine sulphate, see New and Non-official remedies, 1930, page 167. Maltbie Chemical Co., Newark, N. J.

**Ephedrine Hydrochloride-P. D. & Co.**—A brand of ephedrine hydrochloride-N.N.R. For a discussion of the actions and uses of ephedrine hydrochloride, see New and Non-official Remedies, 1930, page 167. Ephedrine hydrochloride-P. D. & Co. is supplied in the form of capsules containing respectively  $\frac{3}{8}$  grain and  $\frac{1}{4}$  grain. Parke, Davis & Co., Detroit.

**Thio-Bismol**.—Sodium bismuth thioglycollate. A salt formed by the interaction of sodium thioglycollate and bismuth hydroxide containing approximately 38 per cent of bismuth. Thio-bismol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (Bismuth Compounds, New and Non-official Remedies, 1930, page 94); it is a water-soluble compound, readily absorbable, and produces relatively little local injury. The product is supplied in the form of ampules containing 0.2 gm. of thio-bismol. Parke, Davis & Co., Detroit. (Jour. A. M. A., July 19, 1930, p. 200.)

#### PROPAGANDA FOR REFORM

**Rickets and Vitamin D**.—Without detracting in the least from the merited value of viosterol in the treatment of rickets, certain recent investigations raise a question as to the simplicity of the pathogenesis of rickets implied in the current use of viosterol. It has been pointed out recently that, whereas both viosterol and cod liver oil are extremely efficacious in curing rickets, only the latter contains in addition the indispensable Vitamin A. Although the most obvious function of calcium and phosphorus is in the building of bones, there are other demands for these mineral elements which,

at times, become of great importance and it has been shown that, whereas Vitamin D is concerned with the calcification of bones, the retention of calcium and phosphorus in the body is largely a function of the level of these materials in the diet. A comparison of the efficacy of cod liver oil and of viosterol as prophylactic antirachitic agents showed that of 123 children given viosterol 29 per cent were not protected against rickets, while of 100 given cod liver oil 3 per cent showed rickets, although the former group received twice the number of units of Vitamin D given the latter group. (Jour. A. M. A., July 5, 1930, p. 38.)

**Therapy with Ovarian Preparations**.—The Council on Pharmacy and Chemistry sponsors the following statement on therapy with ovarian preparations in the current (1930) edition of New and Non-official Remedies: "Rational as ovarian therapy may theoretically appear to be in some conditions, the actual results are rarely striking, and often nil to the careful observer. It is altogether probable that the activity which may be presented by the fresh gland is not contained in a finished desiccated product, or else, when given by mouth, it is destroyed by the digestive juices; extensive clinical experience has failed to establish the value of desiccated preparations administered orally. There is considerable evidence that the aqueous extracts prepared for hypodermic use are inert . . . much work has been done toward the elaboration of a potent, standardized preparation of the ovary, and as a result of these investigations such potent standardized preparations for use by subcutaneous injection have become available. These preparations have been shown to induce estrus in mature animals and to induce sexual maturity in immature animals. Somewhat limited clinical evidence indicates their probable value in ovarian hypofunction." The Council has omitted all desiccated ovary preparations for oral administration on the ground that there is no adequate evidence for their value and, so far, has not accepted any ovarian hormone preparation, because the evidence for the value of these was considered inadequate. (Jour. A. M. A., July 5, 1930, p. 64.)

#### THE DOCTOR'S PRIVILEGE

"If a man wishes to be an honest-to-goodness doctor with the kind of an education that one should have to entitle him to care for the sick and to command the respect and confidence of the people, it is not only necessary for him to spend several thousand dollars but also seven hard working years of his life in order to acquire an education that will permit him to apply for a license to practice. He must then pay a fee to the State Licensing Board for an examination and if successful in passing pay another fee for his license which will permit him to practice only in the state from which he receives the license. In addition to this in many states he will have to pay an annual registration fee to the state and an annual registration fee to the federal government for a license that will permit him to prescribe or give something to a patient to relieve his pain. Nor is this all. In some states an annual occupation tax is levied on practicing physicians. This is the door through which a scientific physician must pass before he is allowed to practice his calling, but if one without the necessary preliminary educational requirements that are imposed on the physician wishes to practice some so-called system or cultism of his own, the door is as open and easy to find as that of the average speakeasy in a prohibition town."—From an address by M. L. Harris, M.D., Past-President of the American Medical Association, in the New York State Journal of Medicine.



## COMMUNICATION

### IMPRESSIONS OF THE B. M. A.

To the Editor:

The ninety-eighth annual meeting of the British Medical Association was held in Winnipeg, August 25 to 29. This was the third time the annual meeting has been held outside the British Isles, having been held in Toronto and Montreal in years past. The attendance was quite large, members being present from different parts of the British Empire; the greater portion was from western Canada. A number of American physicians attended the meeting, among them several delegates from the A. M. A., as well as the president, Dr. Gerry Morgan, President-elect, Dr. H. Starr Judd, and Vice-president Dr. Louis J. Hirschman. The total attendance was about 3,000.

The arrangements were most excellent, making it convenient to attend different sessions and functions.

The social side of the meeting was emphasized and it was strictly British—morning tea, high tea, afternoon tea! The social events of each day were placed on the bulletin board each morning and due attention was given to the hour.

The convention as a whole was carried out with marked dignity and conformity. The Britisher moves around easily with a poise that is not seen in the United States. When addressed he is gracefully courteous.

The scientific sessions were governed in a stately manner; each speaker was assigned a definite part and all were punctual. I think most visitors were impressed with the accuracy of each speaker in discussing his subject. There was no effort to build favorable statistics or stress successes. Each speaker told of his failures or non-success with earnestness. The listener was impressed with the honesty and sincerity of each paper, without effort to praise any individual; the conclusions were for the medical association.

The English surgeon does not take life strenuously; he is fond of social events. This can best be described by citing an instance in the section. A gentleman who was reading a paper stopped for a moment, looked at the time, turned to the chairman, saying, "This is a bit long—I have an engagement for lunch. If you don't mind I will complete it this afternoon," and departed. The chairman thought nothing of it.

An unusual and unique event was the Indian ceremony. Several Indian chiefs and their tribes were present for the occasion, whereby Lord Dawson of Penn, physician to King George, was made big chief medicine man to Indian chiefs. Chief Red Dog was master of ceremonies. Lord Dawson is now Kitche Akemow-O-Maskikie Akemow.

The Hon. R. B. Bennett, Premier of Canada, was present during the ceremony.

The annual dinner of the British Medical Association was given in the Hudson Bay Company building. Over 1,500 were present. Lord Moynihan, of Leeds, England, spoke for the association and British Empire.

ANGUS McLEAN.

Detroit.  
Sept. 15, 1930.

### FINDS NERVES MAY CAUSE EYESTRAIN

Eyestrain, so-called, is more apt to be the result of "nerves" than of any disease of the eyes, Dr. George S. Derby, of Boston, told members of the American Medical Association at Detroit. Dr. Derby described a number of cases he had seen in which the patient recovered from his eyestrain when his bodily condition was treated and when the psychologic cause of his eyestrain was explained and he was persuaded to use his eyes normally.

Dr. Derby suggested that the term eyestrain should be banished from our vocabulary.

"If the general public could learn that eyes are seldom strained, this would be a much happier world to live in," he said. "The fact of the matter is that the eye is provided with a large factor of safety and that healthy eyes do not become diseased even by excessive use."

Most of these cases of ocular neurosis, as Dr. Derby called it, are found in sensitive nervous persons. Fear is the commonest factor in these cases. Some ocular pain or discomfort makes the patient afraid that he is injuring his eyes permanently, that he cannot continue his occupation and perhaps will become dependent. Many of Dr. Derby's patients had given up their work and many pleasures, and were devoting themselves to resting their eyes as much as possible.

Dr. Derby asked ophthalmologists not to overlook the psychologic factor in causes of eyestrain, and to treat the mental condition of their patients as well as to correct their vision with eyeglasses.—Science Service.

### PEPTIC ULCER

Arthur Dean Bevan, Chicago, concludes his review by stating that the field of peptic ulcer belongs to no one specialty. It belongs to and must be cultivated by many men: the general practitioner who will see first the great majority of the cases, the internist, the surgeon, the roentgenologist and the pathologist. No one group can claim this field exclusively as its own. There can be no just conflict between the internal management and the surgical treatment of these cases. The internist who can see little or no place for a consideration of the surgical treatment in 20 per cent of cases of peptic ulcer has a narrow conception of this field and is a menace to many of his patients. On the other hand, the operating surgeon who does not realize that 80 per cent of cases of peptic ulcer can be cured by good medical management may be a more serious menace to the patients that fall into his hands. The roentgenologist who believes that the diagnosis of peptic ulcer depends on roentgenologic observations alone and who independently desires to make the diagnosis on such evidence without a knowledge of the history and gross clinical picture is working at a great disadvantage. Clearly, this is a field for good teamwork and in this team there must be a number of workers: the general practitioner, the internist who is especially trained in stomach work, the surgeon, the roentgenologist and the pathologist. It is only in a clinic where such team-work has been developed that a patient with an ulcer of the stomach can receive the best treatment that modern scientific medicine has to offer. It is only by treating this problem as a piece of scientific research that we can hope to solve it.—Journal A. M. A.

# THE JOURNAL

## OF THE

### *Michigan State Medical Society*

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OCTOBER, 1930

*"I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves, by way of amends, to be a help and ornament thereunto."*

—Francis Bacon.

## EDITORIAL

### THE TUBERCULOSIS PROBLEM

There has been a steady decline in the tuberculosis death rate in the United States which has been accelerated doubtless by the various anti-tuberculosis crusades. Often we consider a problem solved after more or less spasmodic effort or by legislation, as in the case of some social problems, when the only mastery would seem to consist in vigorous and prolonged effort. There are still reported approximately 45,000 deaths annually from tuberculosis; in Michigan the disease occupies fifth place as a mortality factor. It has been demonstrated beyond gain-saying that tuberculosis is a preventable disease. Its control, however, is more difficult

in an industrial population than in states in which the population is largely rural. Among the reasons might be mentioned the fact that an industrial population is on the whole a young population. Housing conditions also are apt to be such as to render segregation and control difficult. Besides, the competition in the industrial world is largely responsible for poverty, under-nourishment, and, as we see today, unemployment.

Both state and county public health departments are functioning efficiently in the way of providing specialized hospital facilities, adequate milk inspection and public health education. The joint committee on Health Education, consisting of representatives from the Michigan State Medical Society with representatives from about a dozen other organizations, have spread enlightenment during the past decade. The work of enlightening the public not only in regard to the prevention of tuberculosis but other conditions affecting public and personal health must be carried on until the community becomes *intelligently* health conscious.

There is still a responsibility which rests with the physician in the matter of recognizing incipient cases. The symptoms of early pulmonary tuberculosis are so protean as easily to mislead. It is only by exhaustive and thorough examination that many of the very early cases can be diagnosed. A sputum examination with negative findings cannot be accepted as implying that the patient is free from the disease. An interview with patients in tuberculosis sanatoriums reveals the fact that many have visited several physicians before the disease was apprehended. Of course many do not consult a physician until their condition shows all the characteristic signs of the disease. In such cases the responsibility is the patient's alone.

It would be a good thing if it were universally a practice among physicians to look upon tuberculosis as a possibility in all ambulant cases in which the symptoms are obscure. Miller\* goes on to say that if only one single precaution were taken in suspicious cases, that is, to have an X-ray examination of the chest made, it would save a large proportion of the mistakes now made. "If less reliance were put upon sputum examinations and less upon fine points of physical diagnosis of the chest and more on the story of the patient as a whole and on

\*Why Do So Many Die of Tuberculosis? By J. A. Miller, M.D., New England Journal of Medicine, July 24, 1930.

the X-ray examination, it is certain that great progress would be made." We go farther; a great deal depends upon the technic in the making of radiographs as well as the skill and experience of the interpreter. An X-ray examination made in an indifferent way may be as misleading as a negative sputum examination. Probably in no other field is an X-ray examination when properly made so valuable as in the diagnosis of pathologic conditions within the thoracic cage.

#### THE LEGAL ASPECT OF X-RAY

This is the title of a paper in this number of the Journal. The paper was prepared by a roentgenologist of recognized standing in the profession who has gone to a great deal of pains in the matter of investigating the legal status of the X-ray. The article, it will be seen, contains a carefully selected bibliography for the reader who wishes to consult the original sources. Attention is also called to references in the Cornell Law Review which are valuable as presenting the legal aspect of the subject. The other sources are largely from the legal columns of medical publications.

The X-ray has come to be recognized as a very important feature of evidence, particularly in industrial and other accident cases. The radiograph, however, has its limitations and in the hands of one who is not an experienced roentgenologist these limitations are sometimes very great.

This paper was prepared at our request because we feel that the subject has a broad appeal not only to the medical profession but also to the legal profession who concern themselves with accident and other cases in which the X-rays are used as a means of evidence. We feel that this feature of the Journal will be widely appreciated by our readers. The contribution is not a medical paper in the ordinary sense of the term. Not only should it be of service to the industrial surgeon, but to everyone who may be called to give testimony in courts.

#### THE FREE CLINIC ABUSE

"The cure of the overcrowded out-patient department to which you referred last week is largely in the hands of the management of the hospital. It is the indiscriminate welcome accorded to all and sundry who apply for treatment that is at the root of the trouble. I would suggest that, except for emergencies, no patient be seen in an out-patient department unless he brings a letter from a doctor." Etc.

This is a letter written by a physician in London, England, to the *Lancet*. Poor human nature seems to be the same wherever one may go. The free clinics in Detroit and other large centers in this state are more crowded than they have been in recent years, if not than ever before. It is said that there are over 5,000 clinics in the United States and that thirty million people took advantage of the services rendered last year. Who can foretell the number of persons who will visit free clinics this year? "This very anomalous situation," writes M. L. Harris, Past President of the American Medical Association, "is due mainly to two causes: first, the inordinate propensity of the medical profession to bestow gratuitously its services whenever requested to do so, without attempting to analyze the situation to see whether the same is needed or even advisable, and, secondly, the proverbial readiness of people to accept service whenever it can be had for nothing."

A special committee on clinics was appointed last year by the Wayne County Medical Society. This committee, with Dr. D. J. Leithauser as chairman, made a thorough study of the clinic situation as it obtains in Wayne County. Their final report to the Society appeared in the Wayne County Medical Bulletin of July 29, 1930. The clinics are of two kinds, namely, tax supported clinics, that is those under the Department of Public Health and the Receiving Hospital; and Community Fund clinics, which include those in connection with the various hospitals. A total of 171,136 persons were cared for at these clinics and a total of 670,088 visits were made by patients to the clinics last year. A duplication of effort was found where patients chased around to several clinics, entailing, of course, duplication of physical examination, X-ray and laboratory examination as the case may be. This in part leads to an overcrowding of the clinics, placing an unnecessary burden on the physicians in charge. The committee report makes the emphatic conclusion that "many cases now in the dispensaries are well able to pay a private physician when only five visits are required in a period of one year. Especially is that true when it is found that many dispensary cases are required to pay their hospital bills when hospitalized."

The committee very properly scores some



of the large industrial institutions of the city, which, in their efforts to speed up production, bring to the city men from all over the country only to dismiss them during the dull season, to be supported by the taxpayer and the Community Fund.

As a solution the committee suggests:

(1) Establishment of a Central Investigating Bureau where all seeking dispensary service must first be thoroughly investigated to determine their earning power, resources, and the number of individuals depending upon their support.

(2) The Bureau to be centrally located and able to accommodate 100,000 yearly. This Bureau to be controlled by a board of directors representing the medical profession, Community Union and free clinics.

(3) Establishing a uniform questionnaire to determine those worthy of free service.

(4) The investigation to be conducted on the same principle as the City of Buffalo, where the applicant seeking charity signs an affidavit of his financial status.

(5) Those eligible, to receive a colored card designating the clinic desired.

(6) The colored card not transferable to any other clinic, unless recommended or advised by the physician in charge.

(7) Reinvestigation required every two or three months.

The recommendations of the committee are well worthy of consideration. It is a very serious state of affairs if one-tenth of the population of a great industrial city like Detroit has arrived at such a stage as to be objects of medical charity. According to the annual report of the Department of Public Welfare of Detroit for 1929, the number of cases obtaining relief was 13,083. This relief included provisions, rent, shoes, clothing, fuel and boarding care, transportation, burials, surgical supplies supplementary to mothers' pensions, and old age pensions. The amount of such aid was \$1,682,331.13. The Community Fund in addition to this averages 151 relief cases per month.

It will be seen that over eleven times as many persons sought free medical service as sought other necessities of existence. These statistics are of 1929. While data are not at hand regarding attendance at clinics the present year, all indications are to the effect, as we have intimated, that it is much greater

than ever before. There is great danger of people becoming "clinically minded," which would presage ill to the medical profession, and eventually react to the detriment of the people themselves. It would be better for all concerned were physicians to treat deserving cases free in their own office than to permit them to get into the habit of running to free clinics whenever they required medical care.

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### COOPERATIVE DIAGNOSTIC LABORATORIES

"The Council of the American Medical Association referred in its annual report to concerns known as 'coöperative diagnostic laboratories' in which practicing physicians participate as 'members.' Information available to the Council indicates that organization of these concerns is effected in such manner that control will lie in the hands of their promoters and directors and that practicing physicians identified with them must pay for 'membership.' These physicians are then expected to refer work to laboratories operated by the concern and, as a consideration for such reference, receive compensation varying in amount with the amount of work referred. The Judicial Council expressed the opinion that schemes of this kind are unethical and directly opposed to the interests of scientific medicine and of the public."—Bulletin American Medical Association.

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### MEDICAL HISTORY

A feature of the Journal of the Michigan State Medical Society for the coming year will be a series of contributions on medical history. Each month will appear a paper by a member of the Medical History Club of the Medical School of the University of Michigan. These papers are biographical and deal with the life and career of a master mind in medicine. This number contains a splendid contribution by Dr. Charles L. Hudson on William Beaumont, whom Osler named a "backwoods physiologist." Sketches of the lives of other noted American contributors to medical science will follow. These papers are not lengthy considering the subject, and it is hoped their conciseness as well as their splendid quality will render this a feature of this Journal that will be highly gratifying to its readers.

### HE MAY NOT PRACTICE

In the September number of this Journal was noted the cancellation of license to practice medicine in this state of a recent medical graduate. It is almost inconceivable how a young man who has spent so much time, money and effort to qualify for the practice of medicine apparently knew no more than to sell his services to a quack concern and to lend himself to the exploitation of quackery. This young man is a graduate of a medical college having a very high standard. He had just completed his internship in a Detroit hospital and had been licensed to practice medicine only a year ago. We mention these facts to show that the young man's intellectual equipment for the practice of medicine was all that could be demanded by any State.

There was something, however, wanting and that is the moral qualification. Dishonesty is inexcusable in any walk of life. When it comes to deceiving sick and helpless men and women it is more than dishonesty; it is a crime.

In a recent number of Harpers Magazine appeared a very enlightening article on The Luxury of Integrity. During the times of financial depression there are found men who will stoop to actions of which they would not be guilty under normal circumstances. There are men and women with weak mental equipment who cannot stand adversity nor face the stern realities when the struggle calls for all that is best in them. Occasionally (let it be mentioned to their credit that it is only occasionally) a member of the medical profession compromises his integrity. There are lectures on the subject of medical ethics in many medical colleges. We believe, however, that the best lesson in medical ethics is the conduct of the teachers and clinicians with whom the medical student comes in contact. Every medical student during his four years in college and during his internship has had opportunity to learn from personal contact with his instructors the attitude of the medical profession toward such matters as abortion, quackery in its various phases, fee-splitting and other similar methods of exploiting the credulity of the public.

It is a regrettable circumstance when any physician is deprived of the right and privilege of maintaining himself through the performance of the duties incident to his

chosen profession. He has, however, no more right to pursue his calling dishonestly than has a felon to persist in his efforts to prey upon honest human beings.

### OUR PRESIDENT—DR. R. C. STONE

Dr. R. C. Stone, of Battle Creek, is the President of the Michigan State Medical Society for the year 1930-1931. Both Dr. Stone and the Michigan State Medical Society are to be congratulated. Dr. Stone has been very popular with the medical profession, which has seen fit to keep him in office for many years, and he in turn has already rendered valuable service. He graduated from the Detroit College of Medicine in



DR. RAY C. STONE  
President Michigan State Medical Society

1904, following which graduation he served internship at Children's Hospital, Detroit, and also Harper Hospital. Six years of his professional career have been devoted to general practice. During 1911 he spent a year in Berlin and Vienna and since his return to Battle Creek he has devoted his time to surgery. Dr. Stone has served on the Council of the Michigan State Medical Society for a period of ten years. He has been Chairman of the Council and member of the executive committee for several years.

The election to the presidency is a fitting

culmination for such a period of service to the Society. Probably never in the history of medicine of this state has the management of medical societies, whether state or county, demanded more time, more perseverance, more tact and diplomacy than at present as well as during the immediate past. Nor are we out of the wilderness yet. The scientific problems of medicine have demanded scholarship and perseverance. There are many scientific problems yet awaiting solution. The time has come, however, when the profession must emphasize the social and economic phases of the care of the sick. This is necessary in the interest of those who are so unfortunate as to be afflicted, as well as for the medical profession itself.

The amendment of the constitution providing for the election by the House of Delegates of a president-elect enables that officer to get in training for a year before assuming the position of president. This is a distinct advantage. The President-Elect, Dr. C. L. Moll, of Flint, Michigan, is likewise a wise choice. We can rest assured that the Michigan State Medical Society will continue as in the past to render efficient service.

#### THE MODERN OATH OF HIPPOCRATES

I swear by the gods and goddesses of Moolah, Hokum, and a couple of others, that I will practice medicine, not as I have been taught, but as the public would have me practice; that I will send bills only once a year and for small amounts, and if paying these bills interferes with the purchase of such essentials as an automobile, radio, piano, or fur coat, I will not require payment; that I will affiliate with some large clinic and utilize my time and endeavors for the free care of patients even though they could easily pay for medical attention; that I will get up at all hours of the night, however unnecessary it may be; that I will not attempt to force my patients to do what I think best, but treat them the way their neighbors suggest; that I will always tell the patient what his ailment is, and particularly, in the case of social disease, with untiring effort, I will notify wife or husband, children, father, and mother, and all other relatives and neighbors; that in cases requiring immediate surgical attention, I will not force the issue, but will let my patient wait as long as he cares to, and if he dies I will take the blame; I will sell my car and home, do away with expensive office furniture, discontinue buying medical books and literature, and in every way cut down my expenses so that I can live, however uncomfortably, without charging my patients anything but minimal sums; and that furthermore I will take no vacations or indulge in any form of amusement in order that I may be at all times at the call of my patients; and finally, with all of the above means to help me, should I not be able to make a living, I will not press my patients for aid, but will secure a position as bell-boy or street cleaner where my education will be of a decided advantage in promulgating rapid progress towards the acme of existence. Yo Hum.—Purloined from the sporting page of the Journal A. M. A.

#### THE INSURANCE COMPANIES AND THE DOCTOR

"These are but a few of the activities displayed by a legal salient of the besieging forces. Closely allied with the legal forces, particularly the workman's compensation laws, are the casualty insurance companies that assume the financial obligations of the employers. These not only claim the right to have their own doctor take care of the injured but also the right to dictate the fees that any other doctor who may be taking care of the case shall charge for his services, but neither of these rights can be sustained. It is the policy of many of these insurance companies to make arrangement for the care of their patients with a hospital that will give them the lowest rates and these rates requested are often lower than the average per diem cost to the hospital. An endeavor is also made, and it has succeeded in some states, to have the rates that a hospital may charge industrial cases, fixed by law. No hospital should make rates for this class of cases that are below the per diem cost nor should a hospital permit such cases to be entered as ward patients and assigned to members of the attending staff who are not allowed to charge for ward patients."—From an address by M. L. Harris, M.D., Past-President of the American Medical Association, in the New York State Journal of Medicine.

#### "GOOD WINE NEEDS NO BUSH"

"The origin of the inn-sign lies, of course, in the illiteracy of the people. It was useless for a trader to have his name and business inscribed upon his premises in days when so few people could read them. So the barber-surgeon put out a multi-colored pole, representing a limb swathed in bandages; the banker put out the three golden balls of Lombardy; the grocer put out a dummy sugar-loaf; the mercer put out a stockinged leg; the goldsmith put out a golden arm holding a gold-beater's mallet; the armourer a knife; the tobacconist a dummy roll of raw tobacco; and so on. The oldest of all inn-signs is that of the Bush, since the bush—a clump of ivy and vine-leaves, symbolical of Bacchus—was the sign by which the very earliest ale-houses were distinguished from adjoining cottages. This sign was the basis of a proverb that much puzzled my childish mind. The house that sold good ale was in little need of this sign; if Mother Rummyng kept good ale her house would become known without any help from the projecting bush; hence 'Good wine needs no bush,' which used to be found in all copy-books. But as 'bush' conveyed nothing to me but a hiding-place, I found the statement meaningless. It seemed to me that if a man wanted to hide any wine at all, he would hide his good wine and push forward his bad. I was equally puzzled by the statement that wine-houses sold 'wine from the wood,' and could not understand why grapes grown in a forest should be better than grapes grown on a hill-side."—From "The English Inn," by Thomas Burke.

#### STATE MEDICINE

(A Letter in the London Times)

Sir:—So much has been said and published on the subject of laxity in certification by doctors under the National Health Insurance regulations, and about the enormously increased demands on the Sickness Benefit Funds, that you may consider it worth while to publish the following personal experience. It appears to be an admirable illustration in miniature of one of the difficulties of the present situation.

I took over a new practice early in May. Soon thereafter a patient called and informed me that he had been "on the panel" for some years. When I examined him I failed to find sufficient clinical



grounds on which to feel satisfied that he was totally incapacitated as required by the regulations. Being unwilling to refuse certificates which had been granted by three of my predecessors, I referred the patient to the Regional Medical Officer, who examined him afresh and then concurred in my opinion. Accordingly, I refused any further certificates.

At that time I had seven persons from the small village whence the patient came on my panel list. Today, some six weeks later, I have two. Very shortly I shall probably have none. No one of the other patients who have transferred has been seen by me.

Such an experience gives one to think. Is honesty really the best policy, as our copy-books used to inform us? Sooner or later service under the National Health Insurance Acts must be made a whole-time employment and the doctor thereby removed from his present position of being at the mercy of disgruntled individuals, if certification is to be on a sound basis. "Free choice of doctor" has become a fetish which is due for destruction. So far as I am aware, men in the Navy, Army, Air Forces, and Post Office have no choice in the matter, yet one hears of no grievance on that account.

Yours faithfully,

July 26.

PANEL PRACTITIONER.

#### WE HOPE HE GOT WELL TANNED

We pity the physician who early in life has not learned to play, and who does not continue to play occasionally throughout his career. We believe that hard work and plenty of it, coupled with the consistent practice of rendering the best service possible, and at all times aiming to keep abreast of the times through reading and post-graduate work, should be the aim of every physician. However, the old adage, "All work and no play makes Jack a dull boy," applies to physicians, and altogether too often the physician, whether he has a large practice or not, keeps his nose to the grindstone to the detriment of himself, his family and his patrons. Two or three short vacations within each year will give him renewed interest in his work and better fit him for his arduous duties. The vacations must be real vacations, when medical practice is forgotten entirely. The vacation may be with rod, gun, golf club, or spent in traveling, depending upon the taste of the physician, but it should be planned to divert him from his regular vocation and give him a change of scene and surroundings. The editor's pet vacation hobby is a visit to the wilds of Canada, miles away from human habitation, even away from mail, telephone or telegraph. There on lakes and streams, with fishing equipment, and accompanied by the good wife, who also loves such an outing, two weeks of the finest sport in the world is enjoyed at least once a year. A couple of experienced guides do the heavy work of paddling the canoes, carrying luggage over the portages, and the work of the camp. Thus the entire time is devoted to rest and recreation, with the inevitable result of furnishing new activity and interest in professional work upon return to civilization. Some physicians may say that they cannot stand the expense, but we do not believe any yarns like that, for a real vacation or outing can be made very inexpensive, and, if need be, it can be near home, though we really feel that an entire change of surroundings is better. That such a vacation pays in dollars and cents as well as in improved health and spirits has been proved over and over again by the experience of those who early in life have seen the beneficial effects of such vacations. Work while you work and play while you play, but don't spend your whole time at either.—Indiana State Medical Journal.

## DEATHS

### DR. CHARLES C. HUBLY

Dr. Charles C. Hubly died at his home, Battle Creek, Mich., August 21, 1930. He was born in Davenport, Iowa, January 28, 1878. Graduating in medicine at the American Medical Missionary College in Chicago, in 1904, he practiced for several years in New Windsor, Illinois. In 1912 he joined the staff of the Sanitarium in the department of internal medicine and developed his specialty in the treatment of metabolic diseases. Surviving relatives are a daughter, Ada C. Hubly, and two sons, James W. Hubly, a senior in the medical department at the University of Michigan, and John D. Hubly, a student at Ann Arbor, as well as a brother, Robert C. Hubly, of Tacoma, Washington. He was a member of the Calhoun Medical Society, Michigan State Medical Society and a fellow of the American Medical Association. Dr. Hubly, from the outset of his career, was a hard worker. He was affable, kind, generous, and inspired the thousands of patients who passed through his hands with hope and confidence.—Calhoun County Medical Society Bulletin.

### DR. ROBERT VINCENT GALLAGHER

Dr. Robert Vincent Gallagher died at his home, Battle Creek, Michigan, August 23, 1930. He was born at Delta, Michigan, September 22, 1870. He was a graduate of the University of Illinois Medical School, class of 1902. He practiced general medicine at Lacy, later at Dowling, Michigan, coming to Battle Creek in 1910. He saw service in the late war from 1917 to 1919, and held a captain's commission in the medical corps. His war service covered work in the aviation branch at the Selfridge Field, Ithaca Air School, Penn Field at Austin, Texas; Kelly Field, and Newport News, Virginia. He was twice married. In 1903 to Iva VanSycle, of Lacy. From that union a son, John E., and a daughter, Margaret, survive. His second wife was Miss Marjorie Hooper, of Battle Creek, who also survives. He also leaves a brother and two sisters. He was a member of the Calhoun County Medical Society and served as its president last year. He was also a member of the Michigan State Medical Society and American Medical Association.—Calhoun County Medical Society Bulletin.

### DR. GEORGE HALE

Dr. George Hale of Detroit died suddenly Sunday, August 31. He had been ill only two days. Dr. Hale was born in Dayton, Ohio, in 1879. He was a graduate of the Detroit College of Medicine and had practiced in Detroit sixteen years. Dr. Hale was active in fraternal organizations. He is survived by his wife and by one sister, Mrs. Grace Charge of Dayton, Ohio.

*"Medicine is a subject slowly evolving out of a past in which facts and fancies, faiths and beliefs, and even superstitions, were strangely commingled. During the past few centuries it has been gradually shedding many of these beliefs and is daily becoming more exact in its methods, and basing its practice more on reason and less on faith."*

—SIR JAMES MacKENZIE.

## SOCIETY ACTIVITY

### 110TH ANNUAL SESSION

Because the Journal goes to press on the twenty-second it is an impossibility to incorporate the minutes of our annual meeting in this issue. The complete report will appear in the November issue.

There were over five hundred in attendance. The House of Delegates adopted the new constitution and by-laws. Pontiac was selected as the place for the 1931 annual session. A Cancer Committee was created. A new section on Dermatology was created. Two new Councilor Districts were created. A committee was appointed to study the question of annual registration of physicians.

The local profession were cordial hosts and provided for our every comfort. All sessions were well attended and universal satisfaction was expressed by all in attendance.

The following officers were elected:

#### OFFICERS

President.....	Ray C. Stone, M.D., Battle Creek
President-elect.....	Carl F. Moll, M.D., Flint
Treasurer.....	John R. Rogers, Grand Rapids
Secretary.....	Frederick C. Warnshuis, Grand Rapids
Editor.....	J. H. Dempster, Detroit

#### COUNCIL

B. R. Corbus, M.D.....	Chairman
Henry Cook, M.D.....	Vice-chairman
Henry R. Carstens, M.D.....	1st District A, Detroit
A. S. Brunk, M.D.....	1st District B, Detroit
J. E. McIntyre, M.D.....	2nd District, Lansing
George C. Hafford, M.D.....	3rd District, Albion
C. E. Boys, M.D.....	4th District, Kalamazoo
B. R. Corbus, M.D.....	5th District, Grand Rapids
Henry Cook, M.D.....	6th District, Flint
T. F. Heavenrich, M.D.....	7th District, Port Huron
Julius Powers, M.D.....	8th District, Saginaw
O. L. Ricker, M.D.....	9th District, Cadillac
Paul R. Urmston, M.D.....	10th District, Bay City
Geo. L. Le Fevre, M.D.....	11th District, Muskegon
Richard Burke, M.D.....	12th District, Palmer
B. H. Van Leuven, M.D.....	13th District, Petoskey
J. D. Bruce, M.D.....	14th District, Ann Arbor
C. A. Neafie, M.D.....	15th District, Pontiac

### MEDICAL PROFESSION AND PATERNALISTIC TENDENCIES OF TIMES

William Gerry Morgan, Washington, D. C., discusses the growth, decline and reincarnation of paternalism in government; paternalism in medicine, voluntary sickness insurance; compulsory sickness, state medicine; the public health movement, and nongovernmental paternalistic tendencies. He calls attention to these matters with a desire to arouse the individual members of the profession to a sense of responsibility in the concerted effort being made to forestall further encroachments on prerogatives which, by virtue of training and experience, belong to physicians as private citizens, members of an honored and honorable profession, whose duty is to the community they serve in their endeavor to prevent and to cure disease.—Journal A. M. A.

## COUNTY SOCIETIES

### KALAMAZOO ACADEMY OF MEDICINE

The June meeting of the Kalamazoo Academy of Medicine was held at the Gull Lake home of Dr. Rush McNair. The regular meeting was preceded by a coöperative dinner provided by the wives of the members.

The minutes of the May meeting as printed in the Bulletin were approved.

Committee reports.

Legislative—Dr. L. J. Crum recently attended a legislative committee meeting in Ann Arbor at which Dr. Lundwall proposed only defensive moves for this period, i.e., opposing cults' bills, later presenting something constructive, possibly something like New York's licensing board. Dr. Crum discussed the proposal of the state legislative committee that each county society do its share in supporting candidates who are favorable to desired legislation.

A motion was carried giving the present chairman of our legislative committee power to appoint a larger committee to coöperate in this matter of legislation, to formulate a plan and present it at our next meeting.

Communications were read.

Application for membership of Dr. Richard F. Weirich of Marcellus, Mich., was read.

Dr. J. B. Jackson moved that the Academy of Medicine instruct its delegates to the State meeting, to invite the State Society to have their next meeting in Kalamazoo. Seconded. Carried.

Dr. J. B. Jackson moved that the program committee be given authority to change the date of our regular September meeting so that it will not conflict with the State Society Meeting in Benton Harbor. Seconded. Carried.

Dr. D. K. Rose, Assistant Professor of Genito-urinary Surgery in Washington University gave a paper on the "Differential Diagnosis of Hypertrophic Prostate and Neurogenic Bladder."

Before adjourning a vote of thanks was extended to Dr. and Mrs. McNair for the very enjoyable time as their guests.

### CALHOUN COUNTY

The June meeting of the Calhoun County Medical Society was held at the Post Tavern, Tuesday, June 3rd. A dinner preceded the meeting. At 7:45 the president, Dr. Wilfred Haughey, called the meeting to order. The minutes of the last meeting, as printed in Bulletin Vol. 12, No. 5, were approved. Under communications: A telegram from Dr. F. C. Warnshuis sent to the secretary of the society, asking for a blanket endorsement to Governor Green of the state council's recommendation for a state commissioner of health, was read. No action was taken on this, however, as the society seemed in favor of waiting to see who was recommended by the council before giving its endorsement. A communication was also read from the Bureau of Education of A. M. A. asking for us to coöperate in a plan looking toward the systematic education of the public in health matters through the medium of local broadcasting stations, and asked that we endorse the plan and appoint a committee to help in developing it. It was moved that we endorse the idea of health education through radio broadcasting, and that a committee of three be appointed by the president to work out the details. The motion was carried. The following were named to serve on a committee to arrange details of broadcasting public health talks:

Dr. H. F. Becker, Dr. R. C. Stone, Dr. H. B. Knapp.

The president also brought up the subject of establishing an orthopedic center in Battle Creek. This was done because of the excellent hospital facilities afforded in this city for the care of crippled children, and because of the hardships imposed upon those who at present are required to take the children to out-of-town clinics for this work. It was moved to appoint a committee to coöperate with the Rotary Club and the Calhoun County Crippled Children's Society in an endeavor to bring this about. The following committee was named in connection with the work of establishing an orthopedic center in Battle Creek: Dr. A. C. Selmon, Dr. N. H. Amos, Dr. C. W. Brainard.

The following bills were approved for payment:

Flowers .....	\$10.00
Secretary's expense.....	7.20
A. M. A.....	.60

The essayist of the evening, Dr. Walter Wilson, of Detroit, was introduced. He gave a very interesting paper on the subject of inflammatory rheumatism with heart complications. His paper was based on the analysis of one hundred cases of rheumatism studied by himself in St. Mary's Hospital, Detroit. He also referred to the study made by Dr. Carey F. Coombs, of Bristol, England, who was able to study ninety-seven autopsies out of his one hundred cases. As to the etiologic factor in rheumatism, no absolute proof of a specific germ has been demonstrated, but various forms of streptococci seem to be the chief factors. It most likely will be found to be a strain of hemolytic streptococcus.

Some people seem to be extremely susceptible to this infection and heredity and hygiene play an important part. Rheumatic fever causes, not only endocarditis, but myocarditis and pericarditis as well, frequently Aschoff's nodules being found in the heart muscle. Of the ninety-seven cases Coombs posted, the mitral valve was affected in 100 per cent, aortic valve in 57 per cent, tricuspid valve in 35 per cent, and the pulmonary valve in 2 per cent. The usual recovery from symptoms of rheumatism does not mean that the disease is really cured, as the cardiac changes usually appear some time after the rheumatism, shortly, or possibly ten or fifteen years later.

He stressed the importance of a long period of rest and observation with periodic white cell counts, in order to check up on the possibility of endocardial changes. This observation should extend over a period of at least a year. The management of inflammatory rheumatism cases after recovery is most important. He illustrated his talk with a few stereopticon slides, giving case reports and showing electro-cardiograms. He urged the importance of taking great care in the after-treatment of this disease, in view of the fact that it so often occurs in the early decades of life and is therefore capable of producing disability throughout life. He is of the opinion that the ultimate cure of inflammatory rheumatism is as difficult as the ultimate cure of syphilis.

In the discussion many interesting points were brought out by Drs. Eggleston, Mortenson, Giddings and Capron. Dr. Chester, of Detroit, was a visiting physician.

Dr. Mortenson stated that the tonsillitis child is a potential rheumatic or heart case, and may develop a heart disease late after rheumatic fever. A crippled, diseased heart in a young adult should be the guide as to occupation. He is of the opinion that the responsibility of treating rheumatic heart cases in the young adult is more important than the treatment of cardiac cases later on in life, when

occupation and career of the patient are not of so much importance.

Dr. Wilson's subject and method of handling cases was well received and eagerly listened to.

Members present, 50.

HARRY B. KNAPP, *Secretary*.

## GRAND TRAVERSE-LEELANAU COUNTY

The annual summer picnic meeting of the Grand Traverse-Leelanau County Medical Society was held Tuesday, August 12, 1930, at the cottage of Dr. E. F. Sladek on Long Lake.

The hosts, Dr. and Mrs. H. B. Kyselka and Dr. and Mrs. E. F. Sladek, served a very bounteous "bohemian" dinner to the following members: Drs. Gauntlett, F. Holdsworth, M. Holdsworth, Inch, Kyselka, Lawton, Minor, Rinear, Sheets, Sladek, Swartz, Thirlby, Way, Brownson, Hastings, Murphy, Smiseth, and Huston; and as guests: Drs. Cyrus C. Sturgis, Frederick Collier, J. O. Bevis, A. C. Kerly, Arthur Abt, Scott, Sauer, W. Sladek, and K. Brownson.

Following dinner, Dr. Cyrus C. Sturgis of the Simpson Memorial Institute at Ann Arbor, gave a very interesting talk on the "Treatment of Pernicious Anemia," illustrated with lantern slides.

Dr. E. F. Sladek was elected delegate to the State Society meeting at Benton Harbor; Dr. J. W. Gauntlett as alternate.

A rising vote of thanks was tendered the hosts, and the meeting adjourned for further refreshments.

E. F. SLADEK, *Secretary*.

## SHIAWASSEE COUNTY

The September meeting of the Shiawassee County Medical Society was held at Memorial Hospital, Owosso, on the eleventh, with a large attendance of members and visitors.

Dr. A. L. Arnold, Jr., exhibited a film entitled, "Treatment of Normal Breech Presentations," which was very interesting.

Dr. R. J. Bailey, of Chesaning, was proposed for membership and accepted by the society.

Dr. T. Y. Ho, of St. Johns, secretary-treasurer of Clinton County Medical Society, was among the visitors present.

This society visited the State Department of Health at Lansing in June, and were finely entertained by the members of the Staff.

W. E. WARD, *Secretary-Treasurer*.

## PERINEPHRIC ABCESS AND FISTULA FORMATION IN CONNECTION WITH GALLBLADDER

Perinephric abscess is generally described as developing by one of three routes: (1) by metastases from a peripheral suppuration; (2) as a result of a perforated renal focus; (3) by contiguity with an infected retroperitoneal organ. The classic and common etiology is the so-called metastatic, while infection by extension from adjacent organs is rare (retrocecal appendix, ulcerated carcinoma). G. E. Gruenfeld and Emanuel Sigoloff, St. Louis, observed two cases of acute and recurrent suppuration of the perirenal tissue in which the source of infection was assumed to be a diseased gallbladder. These two cases differ in their pathogenesis in certain important features, but they present the same diagnostic problem. They found that the intimate topographic relationship between the duodenum and the right kidney is a potential source of surgical complication and it will often be extremely difficult to decide which organ was the primary offender.—*Journal A. M. A.*



## GENERAL NEWS AND ANNOUNCEMENTS

Dr. J. E. G. Waddington of Detroit spent the summer in Germany and Russia.

Dr. Robert H. Baker of Pontiac has returned from a two months' sojourn in Europe.

Dr. A. W. Karch of Monroe, Michigan, was married to Miss Catherine Houghton July 23.

The minutes of the House of Delegates will appear in the November number of the JOURNAL M.S.M.S.

Dr. W. J. Stapleton of Detroit and family, who have been touring central Europe since June arrived home on September 20.

According to the Detroit Free Press the sum of \$5,640,000 has been appropriated and is being spent to dole out relief in the city of Detroit the current year.

The Bulletin of the Oakland County Medical Society reports the new Pontiac General Hospital as nearing completion, which is anticipated about November 1.

Dr. Harry M. Nelson, formerly with the Henry Ford Hospital, has opened offices in the Fisher Building, Detroit, where he will confine his practice to Obstetrics and Gynecology.

About fifty British physicians visited Detroit on Labor Day, when they were the guests of the Board of Health; the objective was the inspection of the new tuberculosis unit of the Herman Kiefer Hospital.

A clinic under the auspices of the Couzens Fund is to be held October 9 at Traverse City. The decision to hold the clinic has come too late to enable the JOURNAL to go into particulars in regard to the program.

The annual conference of secretaries of the various state medical societies will be held at the American Medical Association Building, Chicago, November 14 and 15. This conference includes also editors of state medical journals.

Dr. William M. Clift of Grosse Ile had a narrow escape from drowning September 1. The speed boat in which he and his two sons were riding caught fire between Grosse Ile and Stony Island about half a mile from the shore. The doctor, unable to swim, was rescued by his two sons, Dunham, age 18 years, and William, age 16.

The Wayne County Medical Society opened its 1930-1931 session on the evening of September 23. Dr. Frederick A. Collier, Professor of Surgery of the University of Michigan, addressed the Society on Post-Operative Pulmonary Complications. There was a very good attendance and the meeting started sharp on time. A good beginning. May it continue throughout the year.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons held their forty-third annual meeting at Niagara Falls, Ontario, on the same dates as the annual meeting of the Michigan State Medical Society. Among those of our members who took part were Dr. James E. Davis and Dr. H. Wellington Yates of Detroit. Dr. James E. Davis is secretary to the organization.

Dr. and Mrs. J. D. Bruce and Dr. and Mrs. Wile of Ann Arbor returned the end of August from a sojourn in England and Scotland, as well as on the continent. While abroad Dr. Bruce had occasion to study conditions in Great Britain as they pertain to medical practice. We hope to publish his experiences and reactions to the medical situation in the parts of Europe visited in a near future number.

The Bulletin of the Wayne County Medical Society appears in the twenty-second volume under the editorship of Dr. W. S. Reveno and Mr. William J. Burns as managing editor. The new cover design is simple and attractive. Dr. Reveno has had long, though somewhat sporadic, experience as editor. His first experience was during the presidency of the Wayne County Medical Society of Dr. James E. Davis in 1922. He has served as editor of the Bulletin under several presidents since that time.

### DR. C. B. BURR HONORED

A complimentary dinner was tendered Dr. C. B. Burr of Flint, on September 16 at the Hotel Vincent, Benton Harbor, where fifty guests were present. A complete report of this dinner and presentation to Dr. Burr will appear in the November number of this Journal. Suffice it that the dinner was tendered to the author and editor of the Medical History of Michigan on the completion and publication of this monumental work. At the medical convocation held at the University of Michigan, September 29, the honorary degree of M.A. was conferred upon Dr. Burr.

Fourteen different physicians supplied the thirty-five children from four to eighteen years of age, for the Diabetic Camp at Ore Lake, which closed Saturday, August 16th, near Brighton, Michigan. These children were under the constant care of two physicians, two nurses, and a dietitian. The recreation activities were supervised by five members of the Water Safety division of the Detroit Chapter of the American Red Cross under the direction of Mrs. William H. Cary, Jr. It was very gratifying to return these children to their homes improved in spirit with their Insulin dosage reduced or their diet materially increased, without accident, illness or injury. The Camp was a success and we hope to have another Camp next year.

The following resolution from the Board of Trustees of the American Medical Association was tendered Robert Oakman and Dr. Angus McLean of Detroit. The resolution is in regard to entertainment on board Robert Oakman's yacht on which the annual meeting of the Board of Trustees of the A. M. A. was held during the Detroit meeting.

Resolved, that the Board of Trustees of the American Medical Association express to Admiral Bob Oakman and to Dr. Angus McLean its sincere appreciation of their cordial hospitality and their friendship as expressed by their provision of the

trip aboard the "Mamie O" and the marvelous repast contributed for their meeting of the Board.

Edward B. Heckel  
Rock Sleyster  
Joseph A. Pettit  
J. H. Walsh  
Thomas Scillen

A. R. Mitchell  
Chester Brown  
J. H. J. Upham  
Allen H. Bruce

### THANKS TO GOLF

It took a golf tournament to reveal to many of our members that there are others engaged in the same line of work and subject to the same problems as they are.

With doctors as individualistic as they are, group affairs of this sort are highly essential in that they serve to initiate better understanding and closer affiliation among them. For this reason, the First Annual Golf Tournament successfully carried through by Bill Burns and Dr. R. C. Jamieson's Committee, will go down in the annals of the Society as among the rare occasions when doctors shed their cold reserve and professional dignity and really mixed it. The benefits to be derived are sufficiently obvious to make the holding of such events of frequent occurrence. If a golf tournament can initiate closer ties among doctors and eventually make enough of them come out of their shells so that there might be more of a meeting of minds than there is at present, then we ought to play a lot of golf. Thanks is due to the many friends of the Society for the excellent array of trophies and prizes they donated and which assured the success of the First Annual Golf Tournament.—Wayne County Medical Bulletin.

### THE HIGHLAND PARK PHYSICIANS CLUB

The fifth annual clinic of the Highland Park Physicians Club will be held Thursday, December 4, 1930, at the Highland Park General Hospital. Among those expected to take part are: Dr. Samuel Wyllis Bandler, F.A.C.S., Gynecologist at the Post-Graduate Hospital, New York City; Dr. William Alason White, Professor of Psychiatry, George Washington University, and Professor of Mental and Nervous Diseases; Dr. Dean D. Lewis, F.A.C.S., Professor of Surgery at Johns Hopkins University, Baltimore, Md.; Dr. Ernest E. Irons, Dean and Clinical Professor of Medicine, Rush Medical College; Dr. Max Minor Peet, F.A.C.S., Professor of Neuro-Surgery, University of Michigan, Ann Arbor; Dr. P. A. Jacobs, F.A.C.S., Urologist, Mt. Sinai Hospital, Cleveland, Ohio; Dr. Charles S. White, F.A.C.S., Head in Surgery, George Washington University, Washington, D. C.; Dr. C. H. Nielson, Professor of Medicine, St. Louis University, St. Louis, Missouri; Dr. Goldsmith, Professor of Oto-laryngology, Toronto University, Toronto, Ontario; Dr. A. Primrose, F.A.C.S., F.R.C.S., Dean and Professor of Surgery, Toronto University, Toronto, Ontario.

The Program Committee, consisting of Drs. H. E. Northrup, chairman, C. C. Vardon, E. E. Poos, L. C. Reid, and R. B. Hasner, are striving to have a better clinic than has ever been presented in the State of Michigan.

This year the wives of the visiting doctors will be entertained by the wives of the Highland Park doctors.

A detailed scientific program as well as the program of entertainment will be printed in the next issue of the Journal. One of these programs will also be mailed to each member of the Michigan State Medical Society.

The women's entertainment will be under the able leadership of Mrs. C. C. Vardon, chairman.

## THE STATUTE OF FRAUDS

WM. J. BURNS, LL.B.

*This article was written by Mr. William J. Burns, who is executive secretary of the Wayne County Medical Society and managing editor of the Society's Bulletin. Mr. Burns was for a number of years manager of the Toledo Academy of Medicine. He came to Detroit last January to assume a similar position in connection with the Wayne County Medical Society. He has a legal education and is licensed to practice law in the State of Michigan. However, his entire time is devoted to the work of the Medical Society. The following paper on "frauds" appeared in the July 22nd number of the Bulletin of the Wayne County Medical Society and is here published by Mr. Burns' permission as well as that of the Bulletin. The subject is one with which the doctor is confronted sometime in his life in his business relations with patients.—Ed.*

A physician dropped into our office last week and related the following facts:

"Eight months ago, I was called to attend Mr. M. N. O., who had sustained a Colles' fracture in the act of cleaning ice and snow from his father-in-law's sidewalk. M. N. O. hasn't paid me my fee, and I doubt if he intends to do so, though he enjoyed a perfect recovery. His father-in-law, however, told me months ago: 'If he doesn't pay his bill, I will.' Now, I'd like to start action against both M. N. O. and his father-in-law for the amount of the bill."

"Was the father-in-law's promise made in writing?" was the question asked the physician.

"No," answered the doctor; then he quickly added, "but it was made in the presence of three witnesses."

"The witnesses are of no value," it was necessary to inform him. "The law specifically states, in the Statute of Frauds, that such an agreement must be in writing, otherwise it is void. Your only recourse is against M. N. O. for services rendered."

"Well, by George," exclaimed the physician, "that's a damn queer law. It should be explained to every doctor in the United States so no one else will suffer my sad experience. The whole law of contracts should be aired to the medical profession."

### CONTRACT DEFINED

A contract is an agreement, enforceable at law, between competent parties, for a valuable consideration, to do or to refrain from doing an act or number of acts. The elements of a contract are (1) offer and acceptance; (2) form and consideration; (3) competency of parties; (4) legality of object, and (5) genuineness of consent. In a word, a contract is a meeting of minds. In a modern world, however, the complexities of life often require a visible evidence of this meeting of minds. As a result, we have contracts in the solemn form of a deed of record, and again, we have simple contracts which, though not under seal, are required by law to be in writing. Among the latter are included contracts specifically mentioned in the Statute of Frauds.

### THE STATUTE OF FRAUDS

The famous Statute of Frauds and Perjuries was first enacted in England in 1676. It was legislated as a means of preventing fraud and perjury by requiring, as a matter of evidence, written evidence as distinguished from oral evidence to prove certain contracts. The original Statute contained two sections—the Fourth and Seventeenth—which affected the form of certain simple contracts.

In nearly all the States, statutes containing provisions substantially similar to those of the English

Statute have been enacted. In Michigan, the common law Fourth Section is now known as Sections 11981 and 11977 of the General Code and the English Seventeenth Section is Section 11835 of the General Code. While physicians will be particularly interested only in the first subdivision of Section 11981, it will not be amiss to quote both these ancient laws as they now appear on the statute books of Michigan.

Section 11981 of the General Code of Michigan:

"In the following cases specified in this section, every agreement, contract and promise shall be void, unless such agreement, contract or promise, or some note of memorandum thereof be in writing and signed by the party to be charged therewith, or by some person by him thereunto lawfully authorized, that is to say:

"1. Every special promise to answer for the debt, default or misdoings of another person;

"2. Every agreement that, by its terms, is not to be performed in one year from the making thereof;

"3. Every agreement, promise or undertaking, made upon consideration of marriage, except mutual promises to marry;

"4. Every special promise made by an executor or administrator, to answer damages out of his own estate;

"5. Every agreement, promise or contract to pay any commission for or upon the sale of any interest in real estate."

Section 11977 of the General Code of Michigan:

"Every contract for the leasing for a longer period than one year, or for the sale of any lands, or any interest in lands, shall be void, unless the contract, or some note or memorandum thereof, be in writing, and signed by the party by whom the lease or sale is to be made, or by some person thereunto by him lawfully authorized by writing."

Section 11835 pertains to personal property:

"A contract to sell or a sale of any goods or choses in action of the value of one hundred dollars or upwards shall not be enforceable by action, unless the buyer shall accept part of the goods or choses in action so contracted to be sold or sold, and actually receive the same, or give something in earnest to bind the contract, or in part payment, or unless some note or memorandum in writing of the contract or sale be signed by the party to be charged, or his agent in that behalf."

#### PROMISE TO ANSWER FOR ANOTHER'S DEBT

In his ordinary routine practice, a physician will not be concerned with any portion of the laws quoted above, except the first subdivision of Section 11981. In colloquial English, this Statute reads: "You can't sue a person who promises to pay another's debt unless he promises in writing." Situations covering this point have arisen, are arising, and will continue to arise just as long as doctors render aid to the sick and injured. Physicians will receive promises, promises, promises, and all will float into thin air—unless the doctor is forewarned and forearmed.

#### ORIGINAL PROMISE AND COLLATERAL PROMISE

An original promise is never within the Statute of Frauds. The promise must be to answer for the debt of another; if the promisor is agreeing to pay his own debt, such promise is not covered by this law and need not be in writing.

The question, whether any promise is an original

undertaking, or collateral and conditional, is important and requires a few definitions to aid in its solution. There must be three (3) parties in contemplation, a surety, a principal debtor, and a creditor.

1. A surety is a person not liable before, who engages to be answerable for the debt of another. A surety promises to pay if the principal does not pay. A guarantor promises to pay if the principal cannot be made to pay.

2. A principal debtor is a person for whom the surety is answerable.

3. A creditor is a person for whom the surety engages.

4. Original promises involve cases in which the direct or leading object of the promisor is to further or promote some purpose or interest of his own, even though the benefit accrues to another than the promisor. (No writing is necessary to enforce such promise.)

5. Collateral promises involve cases in which such object is to become the surety or guarantor of the subsisting debt of another for which the promisor was not previously liable. (Such promises must be in writing, to be enforceable.)

#### ILLUSTRATIONS

If, for instance, two persons should come into a doctor's office, and one should receive a treatment, and the other, to gain credit for the patient, promises the physician, "If he does not pay you, I will," this is a collateral undertaking, and must be in writing; but if he says, "Give him medical attention, and I will pay," or "I will see you paid" and the physician extends credit to the promisor exclusively—as to a parent when treating a minor child—this is an original promise and no writing is required.

The Statute was intended to apply to promises made to the person to whom the debt is due, and in order to secure its payment to him.

Thus A owes Dr. X \$40.00 for services, and B agrees with the doctor that if he will forbear to sue A 10 days, he will pay the debt of A, and Dr. X waits accordingly; this promise is void, unless in writing. A is still liable to Dr. X, and would have remained liable for the debt, even if the agreement of B had been in writing.

It is to be noted that a husband's promise to answer for medical attention furnished his wife need not be in writing, as he is liable for her necessities; but a wife's promise to pay her husband's debt must be in writing.

#### BE PREPARED

In conclusion, it is suggested that physicians should beware of promises generally, but especially verbal promises to answer for the debt of another. The latter are worth nothing. That they are made in the presence of witnesses is valuable only to this extent: no man, whether he be swaggering braggadocio or not, enjoys losing countenance before his friends and acquaintances; if he boasts that he will pay the sick man's bill, the physician should be prepared to call his bluff. A paper should be produced for his signature. He will sign or suffer the derision of his friends. The document can be most simple. It can be a typewritten note. A supply should be in the possession of physicians for such emergencies. The note could read as follows:

July 10, 1930.

"For value received, I, Mr. A. Blank, promise to pay Dr. X the sum of \$35.00 for medical attention furnished M. N. O.

(Signed) "A. BLANK."



## THE DOCTOR'S LIBRARY

A TEXT-BOOK OF HISTOLOGY ARRANGED UPON AN EMBRYOLOGICAL BASIS. By J. Lewis Bremer, M.D., Associate Professor of Histology at the Harvard Medical School. (Fourth edition of "Lewis and Stöhr"), 568 pages, 486 illustrations, 32 in color, \$6. P. Blakiston's Son & Co., Philadelphia.

The changes which Professor Bremer has introduced in the present edition of "Lewis and Stöhr" are largely improvements in presentation and accuracy. There are no extensive departures from the plan of the earlier editions and the book retains the same convenient size. It is to be regretted that so little stress is placed upon the physiological and cytological aspects of tissue study, but there is no doubt that the present edition will continue as the standard American work on histology in which the embryological basis of tissue structure is given prime emphasis. The scattered historical paragraphs by Professor Lewis are retained and lend much to the general interest of the study. The work is readable and is well indexed.

SEX GLANDS FUNCTION AND THE HUMAN LIFE. C. Leventis, M.D., Detroit, Mich. Cloth, 132 pages. Price, \$2.00.

Dr. Leventis has been in practice in Detroit since 1912. Before coming to Detroit he practised at Kyparissia and a year at Athens, Greece. He is a graduate in medicine of the University of Athens. The monograph is a complete description of what the author calls the gonadic "sero-endocrine," which is a serum prepared from the blood of the donkey. A detailed account is given of the indications, of preparation, administration and dosage. A number of cases are reported. The work concludes with a bibliography of twenty-four references.

## ANEMIA DEATH RATE DROP SINCE LIVER TREATMENT SEEN

Fewer deaths from pernicious anemia have been reported since the treatment with liver or liver extract has become countrywide, statisticians of the Metropolitan Life Insurance Company have just found in a survey of vital statistics. This statistical proof bears out the impression of doctors and pathologists throughout the country.

It has been claimed that pathologists in medical schools are hampered in their teaching because they cannot find enough fresh material to show the medical students how this disease affects the various organs and parts of the body. Since the introduction of the treatment by Drs. George R. Minot and William P. Murphy of the Harvard Medical School, the deaths from the disease, and even cases of it, have become comparatively rare in the hospitals.

"Whether the use of liver or liver extracts will result in a permanent lowering of the death rate or only to a postponement of death from the disease remains to be seen from the data of individual case experience for subsequent years," the statisticians said.

Since 1926, when the liver treatment was first introduced, the mortality for whites has been reduced by about half between the ages of 55 and 74 years, when formerly the heaviest mortality from this disease occurred.—*Science Service*.

## OF GENERAL MEDICAL AND SURGICAL INTEREST

### NEW ANESTHETIC USED IN EYE SURGERY

Successful use of the new anesthetic, avertin, in certain kinds of eye operations is reported by Dr. W. H. Wilmer of the Johns Hopkins Hospital and University in a communication to the American Ophthalmological Society. Avertin is known chemically as tribromethanol. It was developed in Germany by Dr. Richard Willsträtter of Munich and Dr. Duisberg of Jena.

The new anesthetic has many advantages over ether and is equally safe for certain types of surgery. It is injected instead of being inhaled and is given while the patient is in his bed. He quickly falls into a deep sleep and awakens hours after the operation. The preliminary period of excitement and nervousness is eliminated, as well as a good bit of the post-operative pain and discomfort. Vomiting is infrequent after awakening from avertin anesthesia.

From the surgeon's viewpoint avertin has the added advantage of giving thorough relaxation and there is less bleeding. Pulse and breathing rate are only slightly changed and the blood pressure is lowered a little.

"Where general anesthesia is required, avertin is a safe and valuable addition to the list of drugs used in ophthalmic surgery," Dr. Wilmer said. He pointed out that avertin cannot be used safely where the patients are aged or very weak or when certain diseases are present.

The preparation and administration of the drug require the attention of a member of the hospital staff, either doctor or competent anesthetist, who must give most of his time to this duty.—*Science Service*.

### MASKED HYPERTHYROIDISM

By the term masked hyperthyroidism Walter W. Hamburger and Morris W. Lev, Chicago, wish to designate a group of middle aged, apathetic men and women patients, suffering with thyrotoxicosis, in whom the classic signs and symptoms of hyperthyroidism are wanting but who present an atypical, clinical picture of some other type of disease, as organic heart disease, congestive heart failure, angina pectoris, diabetes mellitus or pernicious vomiting. This group bears a certain relation to the cases of "maladie de Basedow: forme frustes" discussed in the literature. The diagnosis of masked hyperthyroidism, in addition to the points mentioned, rests on a suggestive increased warmth, redness or pigmentation of the skin; slight staring expression of the eyes; increased restlessness; unexplained loss of weight; persistent increase in the basal metabolic rate; improvement or relief of symptoms, and decrease in the basal metabolic rate following iodine medication and thyroidectomy and the histologic appearance of the removed glands. It is important that this frequently undiagnosed or misdiagnosed group of cases be recognized, in spite of the difficulties in diagnosis. They report five illustrative cases.—*Journal A. M. A.*